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TUFTS COLLEG

Vol. XIII

BULLETIN

No.

JANUARY, 1913

ANNUAL CATALOGUE

1912-1913

Published by the Trustees of Tufts Col
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The post-office address of the School of Liberal Arts, kson College for Women, the Crane Theological School, Engineering School, and the Bromfield-Pearson School, UFTS COLLEGE, MASS.

address of the Medical and Dental Schools is 30 HUNTINGTON AVENUE, BOSTON, MASS.

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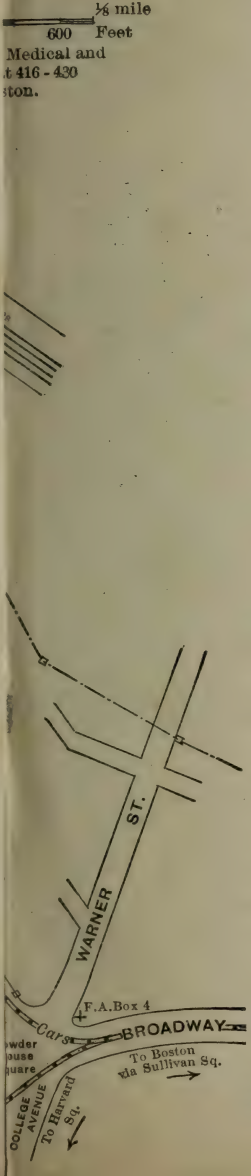

Medical and
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ston.

College Buildings

1 West Hall (dormitory)
2 Packard Hall (Theological class rooms)
3 East Hall (dormitory)
4 Curtis Hall (post-office, class rooms, and dormitory)
5 Chemical Laboratory
6 Dean Hall (dormitory)
7 Goddard Gymnasium
8 Barnum Museum (public museum, biological laboratory, and class rooms)
9 Ballou Hall (main offices and class rooms)
10 Goddard Chapel
11 Eaton Memorial Library
12 Paige Hall (Theological School dormitory)
13 Miner Hall (Jackson College class rooms)
14 Robinson Hall (Engineering laboratories and class rooms)
15 Power Station
16 Bromfield-Pearson Building (Engineering shops and class rooms)
17 Metcalf Hall (dormitory for women)
18 Start House (dormitory for women)
19 Jackson Gymnasium
20 Richardson House (dormitory for women)

Residences

Professors Row
8 Residence of the President
14 Dean Anthony
20 Prof. Lewis
38 " Durkee
48 Dean McCollester
72 Dean Davies
80 Zeta Psi House
92 Prof. Fay
98 " Bray
106 " Tousey
124 Acting President Hooper
128 Prof. Kingsley
134 Alpha Tau Omega House

Sawyer Avenue
13 Delta Upsilon House
14 Prof. Wade
29 Prof. Ransom
37 The Commons Club
45 Prof. Earle, Prof. Bristol

Talbot Avenue
65 Dean Wren
101 Mr. Munro, Prof. Rollins

Powder House Boulevard
104 Prof. Lambert
133 Prof. Rockwell

Curtis Street
114 Prof. Harmon

Packard Avenue
120 Prof. Leonard
123 Theta Delta Chi House
126 Prof. Denison

Latin Way
18 Delta Tau Delta House

College Avenue
184 Prof. Bolles

Boston Avenue
389 Prof. Stewart

Bellevue Street
16 Sigma Tau Alpha House
23 Prof. Conner

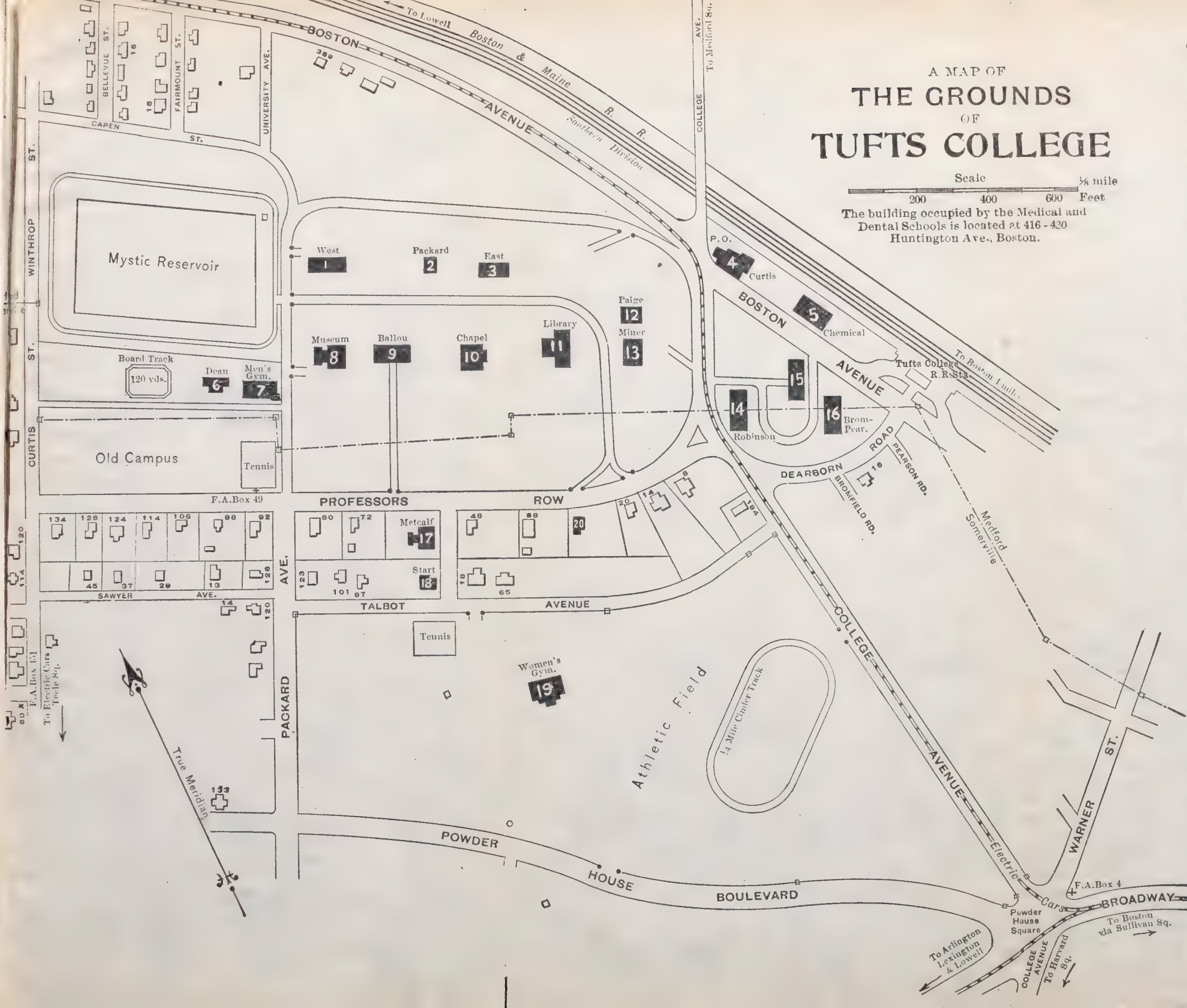
Fairmount Street
18 Dr. Martin

Residences of persons not connected with the College are not indicated.

Post-office address: Tufts College, Mass. Railroad Station: Tufts College, on Southern Division of Boston and Maine Railroad. Electric cars from Boston *via* Sullivan Square. Freight Station: North Somerville, Mass.

A MAP OF

THE GROUNDS
OF
TUFTS COLLEGE



The building occupied by the Medical and Dental Schools is located at 416-420 Huntington Ave., Boston.

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3	East Hall (dormitory)
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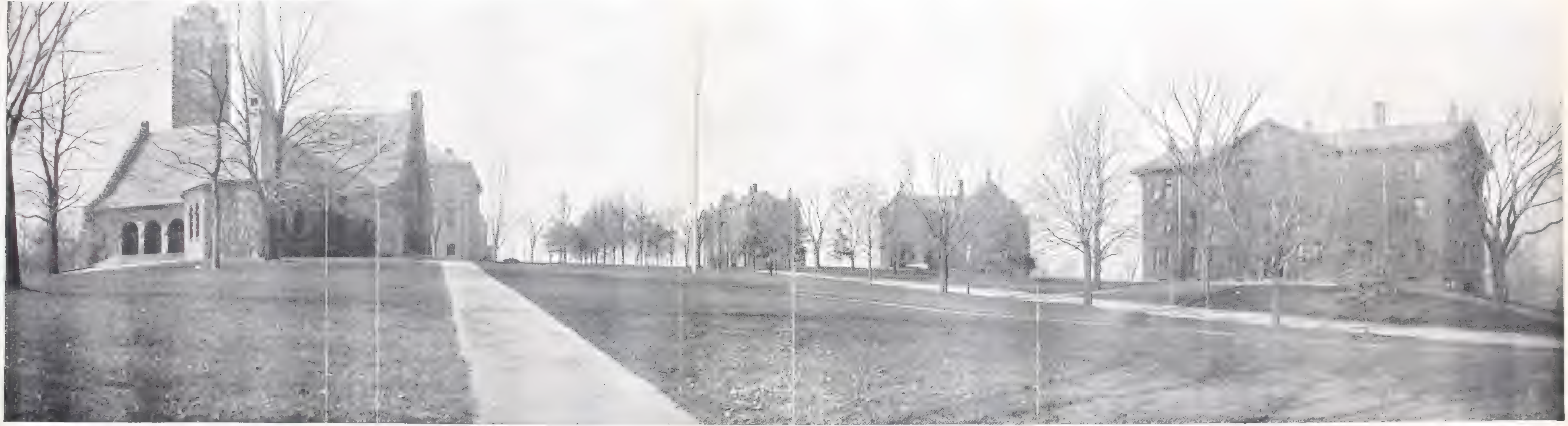

Goddard Chapel Ballou Museum West Packard East

TUFTS COLLEGE CATALOGUE

CATALOGUE

OF

TUFTS COLLEGE

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1912-1913

School of Liberal Arts
Engineering School Graduate School
Medical School Dental School
Crane Theological School
AND
JACKSON COLLEGE FOR WOMEN

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Calendar — 1913

JANUARY

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Tufts College, about four miles from Boston, is accessible by rail and by electric cars. The railway station, "Tufts College," is on the Southern Division of the Boston and Maine Railroad; but goods sent by freight go to North Somerville, Mass., and should be so addressed. The post-office address is "Tufts College, Mass."

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Calendar

1912

Dec. 18. Christmas recess begins, in the Department of Arts and Sciences, Wednesday, 1 p.m.

Dec. 20. Christmas recess begins, Medical and Dental Schools, 1 p.m.

Dec. 30. Christmas recess ends in the Department of Arts and Sciences, Monday, 2 p.m.; in the Medical and Dental Schools, 9 a.m.

1913

Jan. 31, Feb. 1, 3, 4, 5. Mid-year examinations in the Department of Arts and Sciences.

Feb. 5. End of the first half-year in the Department of Arts and Sciences, Wednesday.

Feb. 10. Second half-year in the Department of Arts and Sciences begins, Monday. Registration.

Feb. 22. Washington's Birthday, Saturday. College exercises are suspended.

Mar. 30 to Apr. 6. Spring recess in the Medical and Dental Schools.

Apr. 16. Spring recess begins in the Department of Arts and Sciences, Wednesday evening.

Apr. 23. Spring recess ends, Wednesday evening.

May 9. Goddard Prize Reading, Friday, 8 p.m.

May 24 to 28. Senior examinations in Engineering School.

May 30. Memorial Day, Friday. College exercises are suspended.

May 31. Senior Theses in Engineering School must be filed at the office of the Dean before 5 p.m.

June 7, 9, 10, 11, 12. Final examinations in the Department of Arts and Sciences.

June 13. Class Day, Friday.

June 15. Baccalaureate Sermon, Sunday, 4 p.m.

June 18. Annual Commencement, Wednesday.

June 16–21. Entrance examinations conducted by the College Entrance Examination Board. Application blanks may be obtained from the Secretary of the Board, P. O. Sub-Station 84, New York, N. Y.

Summer Vacation, Thirteen Weeks.

Fall Examinations for Admission to the Department of Arts and Sciences, the Medical School, and the Dental School

Sept. 13. Elementary, Intermediate, and Advanced French, 9 to 11 a.m.; Elementary, Intermediate, and Advanced German, 11 a.m. to 1 p.m.; Elementary and Advanced Greek, Advanced Algebra and Trigonometry, 2 to 5 p.m.

Sept. 15. Algebra, 9 to 10.30 a.m.; English, 10.30 a.m. to 12.30 p.m.; Plane Geometry, 2 to 4 p.m.; Physics, 4 to 5 p.m.; Drawing, 4 to 6 p.m.

SEPT. 16. Elementary, Intermediate, and Advanced Latin, 9 to 12 A.M.; Solid Geometry, 9 to 11 A.M.; Natural History, Geology, and Economics, 11 A.M. to 1 P.M.; History, 2 to 4 P.M.; Chemistry, 4 to 5 P.M.

SEPT. 8. Fall examinations for the removal of conditions, in the Medical and Dental Schools, begin, 10 A.M.

SEPT. 18. College year begins, Thursday Morning.

SEPT. 22. Dental Infirmary opens, 9 A.M.

SEPT. 24. Lectures begin in Medical and Dental Schools, Wednesday, 3 P.M.

OCT. 4. Registration closes in Medical and Dental Schools, 6 P.M.

OCT. 12. Sunday, Columbus Day. College exercises are suspended Monday.

NOV. 19. Announcement of Academic Honors, 12 M., Wednesday.

NOV. 19. Russell Lecture, Wednesday, 8 P.M.

NOV. 27. Thanksgiving Day, College exercises are suspended.

NOV. 30. Thanksgiving recess ends in Medical and Dental Schools, Sunday evening.

DEC. 19. Christmas recess begins, Medical and Dental Schools, 1 P.M.

DEC. — Exact dates of Christmas recess in the Department of Arts and Sciences to be determined by Committee on Common Interests.

1914

JAN. 1. Christmas recess ends in the Medical and Dental Schools, 9 A.M.

JAN. 30, 31, FEB. 2, 3, 4. Mid-year examinations.

FEB. 4. End of the first half-year in the Department of Arts and Sciences, Wednesday.

FEB. 9. Second half-year begins in the Department of Arts and Sciences, Monday. Registration.

Historical Sketch

Tufts College was established under a charter granted on the twenty-first day of April, 1852, by the General Court of Massachusetts. Under this charter, as later amended, the College is empowered "to confer such degrees as are usually conferred by colleges in New England." Its organization now comprises the School of Liberal Arts, the Engineering School, the Graduate School, the Crane Theological School, the Medical School, the Dental School, and Jackson College for Women. The School of Liberal Arts prepares for the degrees of Bachelor of Arts and Bachelor of Science. Work in the Engineering School leads to the degree of Bachelor of Science in Engineering. The Graduate School offers the degrees of Master of Arts and Master of Science. The course in the Theological School leads to the degree of Bachelor of Sacred Theology, that in the Medical School to the degree of Doctor of Medicine, and that in the Dental School to the degree of Doctor of Dental Medicine.

The Foundation.—The movement resulting in the founding of the College was set on foot in 1847, through the efforts of the Rev. Thomas J. Sawyer, of New York, the Rev. Hosea Ballou, 2d, of Medford, and the Rev. Thomas Whittemore, of Cambridgeport. After much consideration, the work of raising a fund of one hundred thousand dollars for a foundation was undertaken, under the direction of the Rev. Otis A. Skinner, of Boston. About sixty thousand dollars was obtained in money. Sylvanus Packard gave his bond for twenty thousand dollars additional, and Charles Tufts gave twenty acres of land on Walnut Hill, embracing the present site of the College. Mr. Tufts announced his intention of increasing his gift of land to more than one hundred acres, and thus became the largest benefactor of the young institution, which accordingly received his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care, and bequeathed to it his entire fortune. Among other benefactors who may be numbered among the founders of the College were Oliver Dean, who gave it ninety thousand dollars, and Thomas A. Goddard, whose gifts, though unobtrusive, were constant. Mrs. Goddard continued the generosity of her husband, and at her death made a substantial bequest to the College. Dr. William J. Walker also made gifts and bequests amounting to nearly three hundred thousand dollars.

While the College owed its beginning to the effort and the support of members of the Universalist denomination, it was provided by the Legislature in the charter that

> "No instructor in said college shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said college, on account of the religious opinions he may entertain."

This provision has always been interpreted by the Trustees and Faculty in its broadest sense. The non-sectarian character of the work of the College is amply shown by the membership of its Faculty and student body. The truth, and not the maintenance of any religious or political doctrine, has been the aim of its research and its instruction.

The Department of Arts and Sciences.— The first Faculty meeting was held October 9, 1854, when there were in College students forming the Sophomore and the Freshman classes. The only building at that time was the main College Building, now known as Ballou Hall. The next building to be erected was a small brick dormitory, now Packard Hall. The large dormitory known as East Hall was the next addition to the group, and in 1872 West Hall was opened to students. It was ten years before building operations were renewed by the College. The original Faculty numbered five. The first class, of three members, was graduated in 1857.

At the outset, provision was made for a course of study leading to the degree of Bachelor of Arts. The only feature of its work peculiar to Tufts College in these years of its beginning was the attention given to the study of history. The first President of the College, the Rev. Hosea Ballou, 2d, D.D., was likewise Professor of History and of Intellectual Philosophy, and gave instruction in history remarkable alike for its quantity and quality, at a time when the study was hardly recognized in American colleges.

Dr. Ballou was succeeded in the presidency by the Rev. Alonzo Ames Miner, D.D., LL.D., who was inaugurated in 1862, and continued in office until 1875, resigning in February of that year. Dr. Miner's incumbency was marked by large financial additions to the College, and by the further growth of a broad and scholarly spirit.

In March, 1875, the Rev. Elmer Hewitt Capen, D.D., was elected to the presidency of the College, vacated by the resignation of President Miner, and he was inaugurated on the second day of June. Dr. Capen's administration, which was characterized by the expansion of the College to university proportions, and was marked by the material and intellectual advance of all departments, was terminated by his death, March 22, 1905.

Rev. F. W. Hamilton, D.D., LL.D., was appointed acting president in 1905, and was inaugurated as president, June 19, 1906.

The Engineering courses were begun in 1869 with a department of Civil Engineering. The great development of electrical science was promptly recognized, and a department of Electrical Engineering was opened to students in 1882, a professorship in the subject being established in 1890. This side of the college work had rapid development: in 1894 the field, was broadened by the addition of a course in Mechanical Engineering, and in 1898 by one in Chemical Engineering. In these courses effort has always been made to give thorough practical training. The will of the late Henry B. Pearson, founding the Bromfield-Pearson School, and putting it into the hands of the Trustees of Tufts College to administer, provided a thoroughly-equipped building for technical instruction, of great value in drawing, pattern-making, and in machine and forge work. The Bromfield-Pearson building was completed in the fall of 1894. Robinson Hall, completed in 1900, gives to the technical courses a modern building with every facility for their work. It was given in memory of the late Charles Robinson, LL.D., sometime President of the Trustees, by his heirs.

In 1881 the late Phineas T. Barnum gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The main Museum building was completed in 1884. The west wing, containing the new biological laboratories, was erected in 1894. The years 1882 and 1883 saw the completion of Goddard Chapel, given by Mrs. Mary T. Goddard as a memorial of her husband, the first treasurer of the College. Goddard Gymnasium, a gift from the same source, was also completed in 1883. The gymnasium has been enlarged and transformed into what is practically a new building. Dean Hall was erected in 1887 from funds bequeathed by the late Oliver Dean. In the college year 1894–95 two new buildings were opened, in addition to the west wing of the Barnum Museum. These were the Chemical building and Curtis Hall, containing students' rooms, class rooms, and the post-office.

The gift of one hundred thousand dollars from Mrs. Andrew Carnegie secured the erection of an adequate library building, called the Eaton Memorial Library, which was begun in 1905, and put into active service in 1908.

The development of the College in its internal life has been the notable fact of recent years. In 1866 the degree of Bachelor of Philosophy was offered to students who should pursue a prescribed course of two years, the object being to provide for those who had been prepared only in English subjects. This course was maintained until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted. The degree of Bachelor of Philosophy has more and more fallen into disuse, in favor of Bachelor of Arts. In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered, with an entrance requirement believed to be fully the equivalent of the Greek, in two modern languages. This was one important step taken by the College toward the broadening of its opportunities, but it soon proved to be insufficient. In the fall of 1893 it seemed possible to take another step and to put into operation the present plan of work, which is believed to be an approach to a rational co-ordination and connection of the college and university systems. The principle which governed this adjustment of the College curriculum has been applied to the entrance requirements. There has been a steady growth for many years in the amount of work done, and in the number of departments of learning represented. Two new departments had been instituted in 1892, in response to the tendencies of educational development,—those of Biology and History. Departments of Music and Philosophy have since been added, the work in Political Science has been broadened, and provision made for the study of Public Law.

There were opened in 1895 courses of four years each in Biology, Chemistry, General Science, and Medical Preparatory work, leading to the degree of Bachelor of Science, and accessible to graduates of all good high schools. The course in Biology was withdrawn in 1905. Bachelors of Science may, if they desire, go on to the attainment of the degree of Bachelor of Arts.

In response to a pressing demand the College was, in the summer of 1892, opened to women on the same terms as to men. After seventeen years of trial, it appeared to both Trustees and Faculty that the interests of the sexes could be better served by separate instruction. The necessary amendments to the Charter were procured and, in the fall of 1910, Jackson College for Women was opened as an affiliated institution. Jackson College is under the direction of the Trustees and President of Tufts College. It has a Dean who is a woman. Otherwise its Faculty is identical with that of Tufts. This arrangement assures to the students in Jackson every educational facility offered by Tufts under conditions more favorable than were formerly possible. In the fall of 1894 there was provided for the accommodation of women students, Metcalf Hall, the gift of Albert Metcalf, of Newton. Start House and Richardson House also offer home-like rooms for women students.

The Professional Schools.—The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. Thomas J. Sawyer, D.D., was elected Packard Professor in 1869. This was the beginning of the Theological School. In 1882 the school had developed so that its Faculty received a definite organization, and Dr. Sawyer became the first Dean, retaining the office until his retirement as Packard Professor Emeritus in 1892. He was succeeded by Rev. Dr. Charles H. Leonard who retired in 1910. From the erection of West Hall until the completion of the separate buildings of the school, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of ex-President Miner, the school was provided with Miner Hall, containing the library, class rooms, chapel, and reception room; and at the same time, largely through the efforts of the Dean, the money was obtained to build Paige Hall, a dormitory for students of the Theological School.

In 1903 a five-year course was offered to students of divinity, combining subjects required for a proper professional equipment with studies that look toward liberal culture. This course is now arranged to cover six years. At its successful completion the degrees A.B. and B.D. are both awarded. There is also a four-year course, leading to B. D.

In 1906 the name of the Divinity School was changed to the Crane Theological School, in recognition of a gift of one hundred thousand dollars from the estate of the late Thomas Crane of New York, whose son, Albert Crane, '63, thus carried out the expressed purpose of his father.

In 1893 Tufts College met what seemed to be a need of the community by opening the Tufts Medical School. The growth of the school in efficiency and numbers justified its institution.

The course is four years in length. Women are admitted upon the same terms as men.

The Medical School found its complement in the Tufts Dental School, organized in 1899 by the absorption of the Boston Dental College, which was incorporated in 1868, and has a numerous body of alumni. The equipment, funds, and good will of this school passed to Tufts College.

Administration.—The control of the College is vested by the charter in a self-perpetuating body of Trustees, not to exceed thirty in number. As the College has matured the number of its alumni upon the Board of Trustees has steadily increased. To give the Alumni as a whole a direct represenation in the administration, a Board of Overseers was instituted, which continued from 1899 till 1907. At this time an amendment to the college charter was passed by the Massachusetts legislature, permitting the election of a certain proportion of Trustees from and by the alumni themselves.

THE COLLEGE CHARTER

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said Trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-President, Secretary and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any Trustee from the same corporation, when in their judgment he shall be rendered incapable, by age or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SEC. 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the Trustees to convene at such meetings, and also, from time to time, to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the Constitution and Laws of this Commonwealth, with reasonable penalties, for the good government of the said College, and for the regulation of their own body; and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one-third, at least, of the Trustees are present.

SEC. 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed; and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal, provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.*

SEC. 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College in such manner as shall most effectually promote virtue and piety, and learning in such of the languages, and of the liberal and useful arts and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SEC. 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges honors, or degrees of said College on account of the religious opinions he may entertain.

SEC. 6. The Legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

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* The limitation as to income has been removed by statute.

SEC. 7. The granting of this Charter shall never be considered as any pledge on the part of the Government that pecuniary aid shall hereafter be granted to the College.

CHAPTER 632 OF THE ACTS OF 1910

AN ACT

TO AUTHORIZE THE TRUSTEES OF TUFTS COLLEGE TO MAINTAIN A SEPARATE COLLEGE FOR WOMEN

BE it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. The corporation known as the "Trustees of Tufts College" may establish and maintain for the education of women exclusively a college to be known as the "Jackson College for Women," and may appropriate and set apart for the maintenance thereof any funds now held by it designated by the donors to be for the education of women, and all property, real and personal, hereafter received by gift, grant, devise or bequest for that purpose.

SECTION 2. All the provisions contained in the act establishing the Trustees of Tufts College, and in the acts in amendment thereof, shall relate to the Jackson College for Women, so far as applicable thereto, except as provided in this act.

SECTION 3. The corporation may, in the name of Jackson College for Women, confer any of the degrees which it by law is authorized to confer: provided, however, that degrees so conferred in course shall be conferred exclusively upon women. It may also adopt and use upon diplomas and other written instruments issued in the Jackson College for Women, a seal of a design differing from the common seal of the corporation.

SECTION 4. Section two of chapter two hundred and fifty-five of the acts of the year nineteen hundred and seven is hereby amended so as to read: Section 2. All persons who for five years have held a degree from Tufts College or from Jackson College for Women, conferred in regular course, and all persons who have received from said colleges an honorary degree, shall be entitled to vote for said ten members. And any person who for ten years has held from said colleges a degree conferred in regular course shall be eligible to be elected a member of said corporation: provided, always, that at least seven of the ten members so elected by the Alumni shall hold from Tufts College the first degree in arts or sciences.

SECTION 5. This act shall take effect upon its passage.

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[*] The members of the Faculty, with the exception of the President, are arranged in the order of the time at which their first academic degrees were taken, or the time of their studies, where an academic degree was not taken in course. A separate list of Lecturers and Assistants is provided.

[†] Boston.

[‡] The post office address is Tufts College, Mass., unless otherwise indicated.

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Russell Lecturer, 1913

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DEPARTMENT OF ARTS AND SCIENCES

Requirements for Admission

AND

General Information

Standing Committees

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* The Faculty of Arts and Sciences consists of the Faculties of the School of Liberal Arts, the Engineering School, the Graduate School, and the Crane Theological School, constituting one body for the discharge of certain administrative functions.

Requirements for Admission

Candidates for admission to the Department of Arts and Sciences must have received adequate preparation in certain subjects falling in two groups, known respectively as the Primary and the Secondary Group. A unit represents a year's study in any subject in a secondary school, representing approximately a quarter of a full year's work.

The Primary Group

English A, 2
English B, 1
*An Elementary Foreign Language, ancient or modern, 2;
Elementary History, 1;
Elementary Algebra, 1½;
Plane Geometry, 1.

Candidates for admission must present all the subjects of the Primary Group, and a certain part of the subjects of the Secondary Group, depending upon the degree in view. No subject offered in the Primary Group can be counted in the Secondary Group.

The Secondary Group

ELEMENTARY

Greek, 2
Latin, 2
French, 2
German, 2
Chemistry, 1
Physics, 1
Botany, 1
Zoology, 1
Geology and Geography, 1
Mechanical Drawing, 1
Freehand Drawing, ½
Shop Work, ½ to 2
Economics, ½
Musical Appreciation, ½
Music (Harmony), ½

INTERMEDIATE †

Latin, 1
French, 1
German, 1

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*Candidates for the degree of Bachelor of Science in General Science, in Chemistry, or in the Medical Preparatory Course, should present Elementary German.

Engineering students will find it an advantage to present both French and German.

† The credit for intermediate subjects, as here given, is in addition to the credit for the corresponding elementary subjects.

ADVANCED *

Greek, 1
Latin. 1
French, 1
German, 1
History, 1
Algebra, ½
Trigonometry, ½
Solid Geometry, ½
Counterpoint, ½
Pianoforte, Voice, or Violin, ½

Candidates for the degree of Bachelor of Arts or Bachelor of Divinity must submit, in addition to the subjects of the Primary Group, a selection of subjects from the Secondary Group aggregating 6½ units, according to the valuation indicated above. Candidates for the degree of Bachelor of Science in the School of Liberal Arts must submit from the Secondary Group subjects aggregating 6½ units, and candidates for the same degree in the Engineering School, subjects aggregating 5½ units.

The following conditions are to be observed:

1. The 6½ units for the course leading to A.B. or for that leading to B.D., must include those representing one advanced ancient language.

2. The 5½ units for any course in engineering must include ½ unit in solid geometry.

Detailed information concerning the amount and character of the work demanded in preparation will be found on the following pages.

Detailed Statement of Requirements

Elementary English. *Three units.*

Preparation in English has two main objects: (1) command of correct and clear English, spoken and written; (2) ability to read with accuracy, intelligence, and appreciation.

The first object requires instruction in grammar and composition. English grammar should ordinarily be reviewed in the secondary school; and correct spelling and grammatical accuracy should be rigorously exacted in connection with all written work during the four years. The principles of English composition governing punctuation, the use of words, paragraphs, and the different kinds of whole composition, including letter-writing, should be thoroughly mastered; and practice in composition, oral as well as written, should extend throughout the secondary school period. Written exercises may well comprise narration, description, and easy exposition and argument based upon simple outlines. It is advisable that subjects for this work be taken from the student's personal experience, general knowledge, and studies other than English, as well as from the reading in literature. Finally, special instruction in language and composition should be accompanied by concerted effort of teachers in all branches to cultivate in the student the habit of using good English in recitations and in various exercises, whether oral or written.

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*The credit for advanced subjects, as here given, is in addition to the credit for the corresponding elementary subjects.

The second object is sought by means of two lists of books, headed respectively *reading* and *study*, from which may be framed a progressive course in literature covering four years. In connection with both lists, the student should be trained in reading aloud and be encouraged to commit to memory some of the more notable passages, both in verse and in prose. As an aid to literary appreciation, he is further advised to acquaint himself with the most important facts in the lives of the authors whose works he reads, and with their place in literary history.

READING (A) *Two Units.*

The aim of this course is to foster in the student the habit of intelligent reading, and to develop a taste for good literature, by giving a first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads.

For Students Entering in 1913, 1914, and 1915

With a view to large freedom of choice, the books provided for reading are arranged in the following groups, from which at least ten units are to be selected, two from each group. Each unit is set off by semicolons.

I. The Old Testament, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the Odyssey, with the omission, if desired, of Books I, II, III, IV, V, XV, XVI, XVII; the Iliad, with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI; Virgil's Æneid. The Odyssey, Iliad, and Æneid should be read in English translations of recognized literary excellence.

For any unit of this group a unit from any other group may be substituted.

II. Shakespeare's Merchant of Venice; Midsummer Night's Dream; As You Like It; Twelfth Night; Henry the Fifth; Julius Cæsar.

III. Defoe's Robinson Crusoe, Part I; Goldsmith's Vicar of Wakefield; either Scott's Ivanhoe, or Scott's Quentin Durward; Hawthorne's House of the Seven Gables; either Dickens' David Copperfield, or Dickens' Tale of Two Cities; Thackeray's Henry Esmond; Mrs. Gaskell's Cranford; George Eliot's Silas Marner; Stevenson's Treasure Island.

IV. Bunyan's Pilgrim's Progress, Part I; The Sir Roger de Coverley Papers in the Spectator; Franklin's Autobiography (condensed); Irving's Sketch Book; Macaulay's Essays on Lord Clive and Warren Hastings; Thackeray's English Humourists; Selections from Lincoln, including at least the two Inaugurals, the Speeches in Independence Hall and at Gettysburg, the Last Public Address, and Letter to Horace Greeley, along with a brief memoir or estimate; Parkman's Oregon Trail; either Thoreau's Walden, or Huxley's Autobiography and selections from Lay Sermons, including the addresses on Improving Natural Knowledge, A Liberal Education, and A Piece of Chalk; Stevenson's Inland Voyage and Travels with a Donkey.

V. Palgrave's Golden Treasury (First Series), Books II and III, with especial attention to Dryden, Collins, Gray, Cowper and Burns; Gray's Elegy in a Country Churchyard, and Goldsmith's Deserted Village; Coleridge's Ancient Mariner, and Lowell's Vision of Sir Launfal; Scott's Lady of the Lake;

Byron's Childe Harold, Canto IV, and Prisoner of Chillon; Palgrave's Golden Treasury (First Series), Book IV, with especial attention to Wordsworth, Keats, and Shelley; Poe's Raven, Longfellow's Courtship of Miles Standish, and Whittier's Snow Bound; Macaulay's Lays of Ancient Rome, and Arnold's Sohrab and Rustum; Tennyson's Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Browning's Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up at a Villa — Down in the City.

STUDY (B*) *One Unit.*

This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions. For this close reading, a play, a group of poems, an oration, and an essay, are provided, as follows:

For Students Entering in 1913, 1914, 1915

Shakespeare's Macbeth; Milton's L'Allegro, Il Penseroso, and Comus; either Burke's Speech on Conciliation with America, or both Washington's Farewell Address and Webster's First Bunker Hill Oration; either Macaulay's Life of Johnson, or Carlyle's Essay on Burns.

Examination.

However accurate in subject-matter, no paper will be considered satisfactory if seriously defective in punctuation, spelling, or other essentials of good usage.

The examination will be divided into two parts, one of which may be taken as a preliminary, and the other as a final.

The first part of the examination will be upon ten units chosen, in accordance with the plan described above, from the lists headed *reading;* and it may include also questions upon grammar and the simpler principles of rhetoric, and a short composition upon some topic drawn from the student's general knowledge or experience. On the books prescribed for reading, the form of the examination will usually be the writing of short paragraphs on several topics which the candidate may choose out of a considerable number. These topics will involve such knowledge and appreciation of plot, character-development, and other qualities of style and treatment as may be fairly expected of high school students. In grammar and rhetoric, the candidate may be asked specific questions upon the practical essentials of these studies, such as the relation of the various parts of a sentence to one another, the construction of individual words in a sentence of reasonable difficulty, and those good usages of modern English which one should know in distinction from current errors.

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* The important changes that go into effect with 1913 consist of a greater emphasis upon formal grammar, rhetorical structure and, in the books under Group B, the study of details.

The second part of the examination will include composition and those books comprised in the list headed *study*. The test in composition will consist of one or more essays, developing a theme through several paragraphs, the subjects to be drawn from the books prescribed for *study*, from the candidate's other studies, and from personal knowledge and experiences quite apart from reading. For this purpose the examiner will provide several subjects, perhaps five or six, from which the candidate may select. The test on the books prescribed for study will consist of questions upon their content, form, and structure, and upon the meaning of such words, phrases, and allusions as may be necessary to an understanding of the works and an appreciation of their salient qualities of style. General questions may also be asked concerning the lives of the authors, their other works, and the periods of literary history to which they belong.

In place of the examinations in Elementary English a candidate may offer the examinations of the College Entrance Examination Board in English A and B.

Elementary German. *Two units*

It is expected that the candidate will have studied the subject in a systematic course for two school years, each covering the equivalent of 120 sixty-minute periods, during which special attention will have been given to pronunciation and to writing from dictation, as well as to the use of clear and idiomatic English in translation.

The examination will consist of two parts: —

(*a*) The translation into German of easy English sentences, to test the candidate's knowledge of the following subjects: the declension of nouns, adjectives, and pronouns; the conjugation of weak and the more frequently recurring strong verbs; the prepositions and cases which they govern; the simpler uses of modal auxiliaries; the elementary rules of syntax and word order. Proficiency may also be tested by questions on these topics.

(*b*) The translation at sight of easy German prose. It is believed that the requisite facility may be acquired by the reading of from two to three hundred pages of easy German, with preference given to narrative style.

[The following list is made up from works suitable for reading in preparation for this examination; Anderson's Bilderbuch ohne Bilder; Arnold's Fritz auf Ferien; Baumbach's Schwiegersohn: Heyse's Hochzeit auf Capri; Storm's Immensee; Leander's Träumereien; Roth's Ein nordischer Held; Benedix, Der Prozess; Wilhelmi's Einer muss heiraten; Fulda's Das verlorene Paradies.]

In place of the examination in Elementary German a candidate may offer the examination of the College Entrance Examination Board in German A.

Intermediate German. *One unit.*

It is expected that the candidate will have pursued, in addition to the work done in preparation for Elementary German, an additional year's work of 120 hours. He should thus have acquired the ability to translate with considerable facility ordinary prose, similar to that of the preparatory course, and to answer briefly in German questions asked in that language by the instructor. Oral practice and dictation should be continued in this third year and a somewhat thorough acquaintance obtained with the rules of syntax, particularly with the subjunctive and infinitive moods; attention should also be given to the simpler facts of word formation — roots, prefixes and suffixes.

The examination will consist of two parts: —

(*a*) The translation into German of a connected passage of simple English, paraphrased from some German text.

(*b*) The translation at sight of passages of ordinary German prose. It is believed that the requisite facility may be acquired by reading in addition to the amount stated for Elementary German, about four hundred pages of narrative and dramatic prose and verse.

[The following list is made up from works suitable for reading in preparation for this examination: Ebner-Eschenbach's Freiherren von Gemperlein; Gerstäcker's Irrfahrten; Hoffmann's Historische Erzählungen; Meyer's Gustav Adolfs Page; Riehl's Burg Neideck und Fluch der Schönheit; Freitag's Aus dem Staat Friedrichs des Grossen, die Journalisten; Schiller's Geisterseher, Neffe als Onkel, and Balladen; Scheffel's Trompeter von Säkkingen.]

In place of the examination in Intermediate German a candidate may offer the examination of the College Entrance Board in German B.

Advanced German. *One unit.*

This examination is open to candidates who have had the equivalent of a four years' course, with an average of 120 full hour periods per year. At the end of this course the student should be able to read, after brief inspection, any (save technical) modern German literature, if free from unusual textual difficulties; to put into German a passage of simple English prose, or to write in that language a brief theme on some assigned topic within his range; and to answer in German questions relating to the lives and certain works of the authors studied.

The examination will consist of three parts: —

(*a*) The writing in German of a paragraph, original or translated.

(*b*) The translation into English of extracts from at least three distinctively different authors. It is believed that the requisite facility may be acquired by reading in addition to the amount mentioned under Intermediate German, about five hundred pages of good literature in prose and verse.

(*c*) An oral test of proficiency in hearing and pronouncing German.

[The following list is made up from works suitable for reading in preparation for this examination: Fouqué's Undine; Scheffel's Ekkehard; Ludwig's Zwischen Himmel und Erde; Freytag's Soll und Haben; Hauff's Lichtenstein; Goethe's Dichtung und Wahrheit (extracts), Die neue Melusine, Hermann und Dorothea; Lessing's Minna von Barnhelm, Schiller's Wilhelm Tell, Jungfrau von Orleans, Geschichte des dreissigjährigen Krieges (third book); Grillparzer's Sappho; Kleist's Prinz von Homburg; Fulda's Talisman.]

In place of the examination in Advanced German, a candidate may offer the examination of the College Entrance Examination Board in German BC.

Elementary French. *Two units.*

It is expected that the candidate will have studied the subject in a systematic course for two school years, each covering the equivalent of 120 sixty-minute periods, during which special attention will have been given to pronunciation and to writing from dictation, as well as to the use of clear, idiomatic English in translation.

The examination will consist of two parts: —

(*a*) The translation into French of easy English sentences to test the candidate's knowledge of the following subjects: the conjugation of the regular and the most frequently recurring irregular verbs; the forms and positions of personal pronouns; the uses of the other pronouns and of possessive, demonstrative, and interrogative adjectives; the variation of nouns and adjectives for gender and number (except rare cases); the partitive construction. Proficiency may also be tested by questions on these topics.

(*b*) The translation at sight of a passage of easy French. It is believed that the requisite facility may be acquired by the reading of not less than three hundred and fifty pages of simple prose, with preference given to narrative.

[The following list is made up from works suitable for reading in preparation for this examination: The easier stories of Daudet, Verne, and Erckmann-Chatrian; Foa's Le petit Robinson and Contes Biographiques; Enault's Le Chien du Capitaine; Malot's Sans Famille; About's Le Roi des Montagnes; Labiche and Martin's La Poudre aux Yeux and Le Voyage de M. Perrichon; Sarcey's Le Siège de Paris.]

In place of the examination in Elementary French a candidate may offer the examination of the College Entrance Examination Board in French A.

Intermediate French. *One unit.*

It is expected that the candidate will have passed, in addition to the work done in preparation for Elementary French, an additional year's work of 120 hours. He should thus have acquired the ability to translate with facility ordinary prose or verse similar to that of the preparatory course, and to answer briefly in French questions asked in that language by the instructor. Oral practice and dictation should therefore be continued in this third year, together with a more detailed study of syntax, particularly of the use of moods and tenses, and of word formation and common idiomatic phrases.

The examination will consist of two parts: —

(*a*) The translation into French of a connected passage of simple English.

(*b*) The translation at sight of passages of ordinary French prose or dramatic verse. It is believed that the requisite facility may be acquired by reading, in addition to the amount required for Elementary French, not less than four hundred pages of prose and verse, preference still being given to narrative form.

[The following list is made up from works suitable for reading in preparation for this examination: About's stories; Daudet's La Belle-Nivernaise; La Brète's Mon Oncle et mon Curé; Loti's Pêcheur d'Islande; George Sand's Les Maîtres Mosaïstes; Mérimée's Colomba; Thierry's Récits des Temps mérovingiens; Thiers's L'Expédition de Bonaparte en Egypte;

Vigny's La Canne de Jonc; Corneille's Horace; Molière's L'Avare and Le Bourgeois Gentilhomme; Racine's Athalie; Augier and Sandeau's Le Gendre de M. Poirier; Coppée's poems.]

In place of the examination in Intermediate French a candidate may offer the examination of the College Entrance Examination Board in French B.

Advanced French. *One unit.*

This examination is open to candidates who have had the equivalent of a four year's course, with an average of 120 full hour periods per year. At the end of this course the student should be able to read at sight, with the help of a vocabulary of special or technical expressions, difficult French of not earlier than the seventeenth century; to write in French a short essay on some simple subject connected with the works read in preparation, and to take part in a simple conversation in French.

The examination will consist of three parts: —

(*a*) The writing in French of an original passage of at least 150 words on some assigned subject.

(*b*) The translation into English of extracts from at least three distinctly different authors. It is believed that the requisite facility may be acquired by reading, in addition to the amount mentioned under Intermediate French, from six hundred to one thousand pages of standard French, inclusive of works merely commented upon in class.

(*c*) An oral test of proficiency in hearing and pronouncing French.

[The following list is made up from works suitable for reading in preparation for this examination: Taine's Origines de la France contemporaine; Sainte-Beuve's Causeries du Lundi (Holt Ed.); Voltaire's Prose (Heath Ed.); Balzac's La Recherche de l'Absolu; Dumas' Les trois Mousquetaires (Ginn Ed.); Pelissier's Anthologie des Prosateurs français contemporains (Paris, Delagrave Ed.); Racine's Andromaque, Britannicus, Athalie; Corneille's Cinna and Polyeucte; Molière's Les Précieuses Ridicules; Beaumarchais' Mariage de Figaro; Hugo's Hernani and Ruy Blas.]

In place of the above, a candidate may offer the examination of the College Entrance Examination Board in French BC.

Elementary Latin. *Two units.*

The Latin reading shall be not less in amount than Cæsar, Gallic War, I—IV, and should be selected by the schools from Cæsar (Gallic War and Civil War) and Nepos (Lives). Candidates will be examined in translation at sight of passages from the above authors, also in grammar and composition.

In place of the examination for two units in Elementary Latin a candidate may offer the following examination of the College Entrance Examination Board:

New Requirements, 3.

Intermediate Latin. *One unit*

The Latin reading, without the prescription of particular authors and works, shall be not less in amount than Cæsar, Gallic War, I—IV, and Cicero, the orations against Catiline, for the Manilian Law, and for Archias; this reading should be selected from Cæsar (Gallic War and Civil War) and Nepos (Lives), Cicero (orations, letters, and De Senectute) and Sallust (Catiline and Jugurthine War).

Candidates will be examined in translation at sight of passages from Cæsar and Cicero. The vocabulary, constructions, and range of ideas will be suited to the preparation secured by the reading indicated above. There will also be an examination on the following prescribed reading: Cicero, orations for the Manilian Law and for Archias.

Or the requirement in poetry, as defined under Advanced Latin, may be offered as optional in place of the third year prose.

The examinations in grammar and composition will demand thorough knowledge of all regular inflections, all common irregular forms, and the ordinary syntax and vocabulary of the prose authors read in school, with ability to use this knowledge in writing simple Latin prose. The words, constructions, and range of ideas called for in the examination in composition will be such as are common in the reading of the years covered by the examination.

In place of the examination for three units in Intermediate Latin a candidate may offer the following examinations of the College Entrance Examination Board:

New Requirements, 1, 2, and 4.

Advanced Latin. *One unit.*

I. AMOUNT AND RANGE OF THE READING REQUIRED

1. The Latin reading, without regard to the prescription of particular authors and works, shall be not less in amount than Cæsar, Gallic War, I—IV; Cicero, the orations against Catiline, for the Manilian Law, and for Archias; Vergil, Aeneid, I—VI.

2. The amount of reading specified above shall be selected by the schools from the following authors and works: Cæsar (Gallic War and Civil War) and Nepos (Lives); Cicero (orations, letters, and De Senectute) and Sallust (Catiline and Jugurthine War); Vergil (Bucolics, Georgics, and Æneid) and Ovid (Metamorphoses, Fasti, and Tristia).

II. SUBJECTS AND SCOPE OF THE EXAMINATIONS

1. *Translation at sight.* Candidates will be examined in translation at sight of both prose and verse. The vocabulary, constructions, and range of ideas of the passages set will be suited to the preparation secured by the reading indicated above.

2. *Prescribed Reading.* Candidates will be examined also upon the following prescribed reading: Cicero, orations for the Manilian Law and for Archias, and Vergil, Æneid, I, II, and either IV or VI at the option of the candidate, with questions on subject-matter, literary and historical allusions, and prosody. Every paper in which passages from the prescribed reading are set for translation will contain also one or more passages for translation at sight; and candidates must deal satisfactorily with both these parts of the paper, or they will not be given credit for either part.

3. *Grammar and Composition.* See statement under Intermediate Latin.

In place of the examination for four units in Latin a candidate may offer the following examinations of the College Entrance Examination Board:

New Requirements, 1, 2, 4, and 5.

SUGGESTIONS CONCERNING PREPARATION

Exercises in translation at sight should begin in school with the first lessons in which Latin sentences of any length occur, and should continue throughout the course with sufficient frequency to insure correct methods of work on the part of the student. From the outset particular attention should be given to developing the ability to take in the meaning of each word — and so, gradually, of the whole sentence — just as it stands; the sentence should be read and understood in the order of the original, with full appreciation of the force of each word as it comes, so far as this can be known or inferred from that which has preceded and from the form and the position of the word itself. The habit of reading in this way should be encouraged and cultivated as the best preparation for all the translating that the student has to do. No translation, however, should be a mechanical metaphrase. Nor should it be a mere loose paraphrase. The full meaning of the passage to be translated, gathered in the way described above, should finally be expressed in clear and natural English.

A written examination cannot test the ear or tongue, but proper instruction in any language will necessarily include the training of both. The school work in Latin, therefore, should include much reading aloud, writing from dictation, and translation from the teacher's reading. Learning suitable passages by heart is also very useful, and should be more practised.

The work in composition should give the student a better understanding of the Latin he is reading at the time, if it is prose, and greater facility in reading. It is desirable, however, that there should be systematic and regular work in composition during the time in which poetry is read as well; for this work the prose authors already studied should be used as models.

Elementary Greek. *Two units.*

The examination will be adapted to the proficiency of those who have studied Greek in a systematic course for two years. It will consist of two parts, which cannot be taken separately: —

(*a*) The translation at sight of passages of simple Attic prose.

(*b*) An examination on Xenophon's Anabasis, directed to testing the candidate's mastery of the ordinary forms, constructions, and idioms of the language.

Before taking the elementary examination the candidate should have read, in addition to the usual grammar work, at least four books of Xenophon's Anabasis, or an equivalent.

In place of the examination in Elementary Greek a candidate may offer the following examinations of the College Entrance Examination Board.

Greek A i and ii, B, and G.

Advanced Greek. *One unit.*

The examination will be adapted to the proficiency of those who have studied Greek in a systematic course for three years. The two parts of the examination may be taken separately: —

(*a*) The translation at sight of an average passage of Homer; with questions on ordinary forms, constructions, and idioms, and on prosody.

(*b*) The translation into Attic prose of a passage of connected English narrative. The passage set for translation will be based on some portion of the Greek prose works usually read in preparation for college.

Before taking the examination in Advanced Greek the candidate should have completed at least four books of Xenophon's Anabasis, or their equivalent in Attic prose, and six books of Homer's Iliad, or their equivalent in the Odyssey. It is recommended that Greek composition accompany all stages of the preparation, and that the pupil be practiced in reading Greek aloud from the beginning of the course.

In place of the examination in Advanced Greek a candidate may offer the following examinations of the College Entrance Examination Board.

Greek A i, B, C or CH, F, and G.

Elementary History. *One unit.*

One of the following: —

1. Greek and Roman History. (*a*) The history of Greece to the death of Alexander, with due reference to Greek life, literature, and art, as treated in the histories of Botsford, Oman, West, or Myers. (*b*) The history of Rome to the accession of Commodus, with due reference to Roman literature and government. Such texts as those of Morey, Botsford, West, or Allen will indicate the character of the work desired.

While the periods indicated above will be accepted as satisfying the entrance requirements in ancient history, it is strongly recommended that the study of the history of Greece be continued to the conquest of Greece by Rome, and that the history of Rome be pursued to the fall of the Western Empire.

This does not necessarily imply any increase in the time devoted to Greek and Roman history.

2. English History. The history of England, with due reference to social and political development. The histories of Andrews, Larned, and Montgomery will indicate the character of the work expected.

3. The History and Government of the United States. Such texts as McLaughlin's History of the American Nation, Johnston's or Channing's History of the United States, and Fiske's Civil Government should be used.

It is recommended that all candidates for admission to the courses leading to the degree of A.B. or B.D. should offer Greek and Roman history.

The elementary requirement in history implies one year's work of not less than five periods a week. A note-book of not less than fifty written pages, based upon three hundred pages of collateral reading, must be presented at the time of examination. Equivalents for the subjects named above will be accepted, but candidates desiring to offer substitutes must give notice to the Secretary of the Faculty at least one month previous to the time set for the examination. Work in the text-book should be constantly accompanied by collateral reading. The attention of teachers is called to the Report of the Committee of Seven, published by the Macmillan Company, New York, under the title, "The Study of History in Schools."

In place of any one of the examinations described above a candidate may offer any one of the four examinations in History of the College Entrance Examination Board.

Advanced History.

1. The History of Greece and Rome, as described above, for those only who have offered English history or the history and government of the United States as primary subjects.

2. The History of England as described above, for those who have not offered English history as a primary subject.

3. The History and Government of the United States, for those who have not offered History and Government of the United States as a primary subject.

Each of these subjects requires one year's study of not less than five recitation-periods a week. A note-book of not less than fifty written pages, based upon three hundred pages of collateral reading, must be presented at the time of the examination. Equivalents for the subjects outlined above will be accepted, upon due notice, as indicated above under Elementary History.

In place of any of the examinations in Advanced History a candidate may offer any one of the four examinations in History of the College Entrance Examination Board, provided that the subject so offered has not been accepted for the Elementary History requirement.

Mathematics.

A knowledge of the metric system, and ability to perform accurately the ordinary processes of arithmetic, are presumed. Subjects 1 and 2 are required in the Primary Group.

1. Algebra, through quadratic equations in one and two unknown quantities, the progressions, ratio and proportion, and the binomial theorem for positive integral exponents.

One and one-half units.

2. Plane Geometry, including the usual theorems on straight lines, angles, rectilinear figures, circles, and regular polygons; similar triangles and proportion; construction; original exercises in demonstration; numerical problems in mensuration. *One unit.*

3. Advanced Algebra: Permutations and combinations; complex numbers and the graphical representation of sums and differences; determinants including the use of minors, and the solution of linear simultaneous equations; solution of numerical equations of higher degree and so much of the theory of equations, with graphical methods, as is necessary for their treatment, including Descartes' rule of signs and Horner's method. Credit in Advanced Algebra is given only on examination. *One-half unit.*

4. Solid Geometry, including properties of straight lines and planes, dihedral and polyhedral angles; of projections, of polyhedrons, including prisms, pyramids, and the regular solids; of cylinders, cones, and spheres; of spherical triangles, and the measurement of surfaces and solids. *One-half unit.*

5. Plane Trigonometry, including the definition and relations of the six trigonometrical functions as ratios, proof of important formulæ, theory of logarithms and use of tables, solution of right and oblique plane triangles. *One-half unit.*

In the last three subjects, the school should insist upon the same amount of work and aim at the same standard of scholarship as the college requires in its courses in these subjects.

In place of the examinations in Mathematics a candidate may offer the examinations of the College Entrance Examination Board as follows:

Math. A for 1; Math. C for 2; Math. B for 3; Math. D for 4; Math. F for 5.

Physics. *One unit.*

The unit in Physics consists of at least 120 hours of sixty minutes each. Time spent in the laboratory shall be counted at one-half its face value. The course of instruction should include: (1) The study of one standard text-book. (2) Individual laboratory work consisting of experiments requiring at least the time of 30 double periods. Each student should perform at least 30 experiments, so distributed as to cover as fully as possible the subject matter of the text-book.

In lieu of the presentation of the laboratory note-book, at the time of the examination, the candidate must present a certificate in the following form:

TEACHER'S CERTIFICATE

.... School

.... 19

I certify that .... has personally performed and properly recorded in a suitable note-book .... experiments in the physical laboratory of the .... School, during the year ....

The entire course has occupied time equal to .... hours of 60 minutes each, of which .... hours have been given to the laboratory work and .... hours to lecture and recitation work.

Signed ....

Teacher of Physics.

The teacher may here enter the final grade of ... . per cent.

In place of the above, candidates may present the examination of the College Entrance Examination Board in Physics.

Chemistry. *One unit.*

Preparation for this requirement presupposes a course in general inorganic chemistry (non-metals and metals) of not less than five periods a week for a year. The amount of class work should equal that in An Introduction to the Study of Chemistry, by Ira Remsen, and the experiments should be equivalent to those in Remsen's Laboratory Manual. Time spent in the laboratory shall be counted at one-half its face value. The experiments must be performed by the student, and a certified laboratory note-book must be presented at the time of the examination.

In place of the above, candidates may present the examination of the College Entrance Examination Board in Chemistry.

Botany and Zoology. *One unit each.*

In Botany and Zoology the examiners give more weight to the character of the work than to time spent; but at least five periods a week for a year must be given to each subject presented, and of this at least a half should consist of laboratory work. Certified copies of laboratory note-books must be presented. The work should be in structural and physiological lines and should include a detailed study of at least ten types.

In place of the examinations in Botany and Zoology, candidates may offer the examinations in Botany and Zoology of the College Entrance Examination Board.

Geology and Geography. *One unit.*

At least five periods a week for a year must have been given to the subject presented. There should have been some laboratory work and excursions. Certified copies of note-books of laboratory work and excursions must be presented.

1. Geology: Norton, Brigham, or book of equivalent grade.
2. Geography: Davis, or book of equivalent grade.

In place of the examination in Geology and Geography, candidates may offer the examination in Geography of the College Entrance Examination Board.

Freehand Drawing.* *One unit.*

The examiner requires evidence of ability to make an accurate outline or shaded drawing from a group of geometric models, or a shaded drawing from a simple cast. Such a knowledge of the fundamental principles of perspective is required as shall enable the student to draw a simple geometric figure without the use of a model. Certified drawings must be submitted and the student may be examined on all points in doubt.

In place of the above the candidate may offer the examination in drawing of the College Entrance Examination Board.

Mechanical Drawing.* *One unit.*

Accuracy and neatness in drawing is of the first importance, and no amount of work will make amends for neglect in these respects. The student must be familiar with the use of ordinary instruments, and able to solve geometrical problems with accuracy and rapidity. He must also be practiced in the drawing of the ellipse, the parabola, and the hyperbola, and have an elementary knowledge of projection, intersection, and development. The suggested course is included in the first one hundred pages of Anthony's Elements of Mechanical Drawing. Certified drawings must be submitted for approval.

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* Not more than two units may be counted by any candidate in the subjects of Drawing and Shopwork.

Shopwork.*

The following units are given for courses satisfactorily pursued in well organized and fully equipped manual training or technical high schools in which the broad foundations of manual and graphic culture are given. The elementary work in the several courses must be thoroughly covered, and no credit will be given for premature engineering work.

Joinery	*One-half unit*
Wood Turning and Elementary Pattern Making	*One-half unit*
Forging	*One-half unit*
Bench and Machine Metal Fitting	*One-half unit*

Details of the work required for preparation in the above courses may be obtained by application to the Department of Mechanic Arts.

Elementary Economics. *One-half unit.*

Preparation for Economics presupposes that the candidate has studied the subject in a systematic course of at least three periods a week for one full year. Credit in Economics will be given only on examination. The examination will be based upon such text-books as Bullock's or Seager's Introduction to the Study of Economics. A knowledge of civics and, particularly, modern industrial history is of great value in supplementing the study of economic theory.

Music.

Entrance credit in Music is given only on examination. Not more than one unit in Music may be counted by any candidate.

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* See foot-note on preceding page.

(A) MUSICAL APPRECIATION. *One-half unit.*

The examination will be adapted to the attainment of those who have had one year's systematic training, with three lessons a week, or its equivalent. The candidate is expected to have (1) a general knowledge of the principal musical forms—song, classic dance, fugue, sonata (all movements), symphony—and of their historical development; (2) a general knowledge of the lives and environment of at least ten composers, including Bach, Mozart, Beethoven, Schubert, Chopin, and five of the following: Purcell, Handel, Gluck, Haydn, Cherubini, Weber, Rossini, Glinka, Mendelssohn, Schumann, Wagner, Verdi; (3) familiarity with certain designated works, the list of which may be had on application to the Secretary of the College. In the examination on these works, the candidate will be expected to identify characteristic portions of the works set, when played by the examiner; and to give intelligent information concerning the form and character of the works themselves. The test will not require ability to perform, nor to read from printed music.

(B) HARMONY. *One-half unit.*

The examination will be adapted to the proficiency of those who have had one year's systematic training, with three lessons a week, or its equivalent. The candidate should have acquired (1) the ability to harmonize, in four vocal parts, simple melodies of not fewer than eight measures, in soprano or in bass: these melodies will require a knowledge of triads and inversions, of diatonic seventh chords and inversions, in the major and minor modes; and of modulation, transient or complete, to nearly-related keys; (2) analytical knowledge of ninth chords, all non-harmonic tones, and altered chords (including augmented chords). [Students are encouraged to apply this knowledge in their harmonization.]

It is urgently recommended that systematic ear-training (as to interval, melody, and chord) be a part of the preparation for this examination. Simple exercises in harmonization at the pianoforte are recommended. The student will be expected to have a full knowledge of the rudiments of music, scales, intervals, and staff-notation, including the terms and expression-marks in common use.

(D) PIANOFORTE, OR (E) VOICE, OR (F) VIOLIN. *One-half unit.*

The examination in each of these subjects will consist of a test in theory, and a test in performance. The former will be conducted in writing, and will be adapted to the proficiency of those who have had one year's systematic training, with one lesson a week, or its equivalent. The candidate should have acquired:

A knowledge of the rudiments of music, scales, intervals, and staff-notation, including the terms and expression-marks in common use; the ability to analyze the harmony and form of hymn-tunes and simplest pieces for the pianoforte, involving triads and the dominant seventh chord and their inversions, passing tones, and modulation to nearly-related keys; the ability to harmonize, on paper, in four vocal parts, melodic fragments involving the use of triads and the dominant seventh chord and their inversions in major keys.

As a basis of the test in performance, the candidate is to furnish a detailed statement from the teacher, showing the course of instrumental or vocal study pursued.

In place of the above, candidates may offer the corresponding examination of the College Entrance Examination Board: Music A, B, and D or E or F.

METHODS OF ADMISSION

Admission to Tufts College may be obtained by examination, by certificate, or by a combination of the two methods. Every candidate for admission must present a testimonial of good character from the Principal under whom he was prepared for college.

Admission by Examination

In June, 1913, the admission examination of this College will be the examinations of the College Entrance Examination Board, of which Tufts College is a member. The examinations will be held during the week June 16–21, 1913.

All applications for examination must be addressed to the Secretary of the College Entrance Examination Board, Post Office Sub-Station 84, New York, N. Y., and must be made upon a blank form, to be obtained from the Secretary of the Board upon application.

Applications for examination at points in the United States east of the Mississippi River, also at Minneapolis, St. Louis, and other points on the Mississippi River, must be received by the Secretary of the Board at least two weeks in advance of the examinations, that is, on or before Monday, June 2, 1913; applications for examination elsewhere in the United States or in Canada must be received at least three weeks in advance of the examinations, that is, on or before Monday, May 26, 1913; and applications for examination outside of the United States and Canada must be received at least five weeks in advance of the examinations, that is, on or before Monday, May 12, 1913.

Applications received later than the dates named will be accepted when it is possible to arrange for the admission of the candidates concerned, but only upon the payment of $5.00 in addition to the usual fee.

The examination fee is $5.00 for all candidates examined at points in the United States and Canada, and $15.00 for all candidates examined outside of the United States and Canada. The fee (which cannot be accepted in advance of the application) should be remitted by postal order, express order, or draft on New York to the order of the College Entrance Examination Board.

A list of the places at which examinations are to be held by the Board in June, is published about March 1. Requests that the examinations be held at particular points, to receive proper consideration, should be transmitted to the Secretary of the Board not later than February 1.

For the convenience of those who present the examinations of the College Entrance Examination Board, the following table of equivalents is presented:

TUFTS COLLEGE ENTRANCE SUBJECTS	COLLEGE ENTRANCE EXAMINATION BOARD EQUIVALENT
English A	English A
English B	English B
Elementary German	German A
Intermediate German	German B
Advanced German	German BC
Elementary French	French A
Intermediate French	French B
Advanced French	French BC
Elementary Latin	Old requirements, A i and B New requirements, 3
Intermediate Latin	Old requirements, A i and ii, B, and C or D New requirements, 1, 2, and 4
Advanced Latin	Old requirements, A i, B, C, L, P, and Q or DQ New requirements, 1, 2, 4, and 5
Elementary Greek	Greek A i and ii, B, and G
Advanced Greek	Greek A i, B, C or CH, F, and G
Elementary History	History, A, B, C, or D
Advanced History	History, A, B, C, or D
Mathematics	
Algebra	Mathematics A
Plane Geometry	Mathematics C
Advanced Algebra	Mathematics B
Solid Geometry	Mathematics D
Trigonometry	Mathematics F
Physics	Physics
Chemistry	Chemistry
Botany	Botany
Zoology	Zoology
Geology and Geography	Geography
Freehand Drawing	Drawing
Music, A, B, D, E, F	Music, A, B, D, E, F

Entrance examinations will be conducted at Tufts College in September. These examinations are held on the Saturday, Monday, and Tuesday preceding the beginning of the college year, in accordance with the program printed in the calendar, pages 3 and 4.

All candidates for examination in September are required to register at the office of the Registrar before taking their examinations. A fee of $5.00 is charged all candidates for the

September examinations. Those who subsequently enter the Department of Arts and Sciences will not be required to pay the registration fee.

At the regular examination those who will be candidates for admission to the. Freshman class one year later may present themselves for examination in the subjects of the Primary Group, and in others in which their teachers may certify that they are adequately prepared.

Admission by Certificate

In place of examinations, certificates will be accepted from preparatory schools which have been approved by the New England College Entrance Certificate Board. All schools in New England which desire the certificate privilege should apply to the Secretary of the Board, Professor Nathaniel F. Davis, 159 Brown Street, Providence, R. I., before April 1st of the year for which the certificate privilege is desired.

Applications for the certificate privilege for schools outside of New England should be made by the Principal on a blank provided for the purpose by the Registrar of the College. Applications should be received before April 1st, in order that the school may be placed upon the approved list for the next academic year.

The academic diploma of the Regents of the State of New York will be accepted in satisfaction of the requirements for admission when such diploma covers the subjects required for entrance.

Credit in the following subjects, which are outside the ordinary preparatory school curriculum, is allowed only upon examination : Advanced Algebra, Economics, and Music.

Certificates showing that candidates have fulfilled the entrance requirements of another college or university in subjects required for admission to Tufts College will ordinarily be accepted for corresponding subjects.

Certificates should be in the hands of the Registrar of the College at least one month before the opening of the college year. Blank forms of certificates will be sent upon request to the Registrar, Tufts College, Massachusetts.

General Information

REGISTRATION

Every student is required to file at the office of the Registrar a plan of study for the term, on the opening day of the term.

The registration is made in triplicate on blanks furnished for the purpose, one copy to be kept on file by the Registrar, one by the Dean, the third to be used, in case of Freshmen, by advisers, and in case of special students and members of the upper classes, by major instructors. Each student also furnishes such data as are required by the Registrar for class lists. Registration is made for the first half-year in accordance with the following schedules: —

I. For students in the School of Liberal Arts, the Crane Theological School, and the Graduate School:

8:30–9 A.M. — All students registering for the first time as candidates for A.B. or B.S., or as special students, will pay the registration fee of five dollars at the Bursar's office, unless they have already paid an examination fee to the College.

9–9:30 A.M. — All students receive registration blanks and notice of appointment with major instructor or adviser, at the Registrar's office.

9:10–10:40 A.M.—All students meet their major instructors or advisers in accordance with appointments.

9.45.—All students registering for the first time assemble in Room 4, Ballou Hall, for instructions concerning registration, and assignment to advisers.

2–3 P.M. — Students obtain the necessary signatures and file program cards at the Registrar's office. The approval of the major instructor or adviser is to be obtained after the separate subjects have been approved by the respective instructors.

On Friday, the second day of the term, all classes meet for assigned periods of fifteen minutes. See below, under Program.

Regular program appointments are in force on Saturday.

II. FOR STUDENTS IN THE ENGINEERING SCHOOL:

9:30–10:30 A.M.—All students registering for the first time will pay the registration fee of five dollars at the Bursar's office, unless they have already paid an examination fee to the College.

10–12 A.M.—All students in this School obtain blanks and file programs at the Registrar's office.

Members of the three upper classes register in accordance with programs prepared at conferences during the June examination period.

11 A.M. — All Freshmen assemble in the chapel for instructions concerning registration, and information regarding courses.

Regular program appointments are in force on Friday.

Consultations concerning programs for the second half-year are held by appointments with advisers and major instructors during the examination period. On the first day of the second term, between 9 and 12 o'clock, students file their individual programs. Recitations begin in accordance with the regular program on Tuesday, the second day of the term.

A registration fine of two dollars is imposed upon students who fail to register in person during the time prescribed above. This rule does not apply to students registering for the first time. Students are not recognized as members of classes until they have met all requirements of registration.

During the hours set apart for registration, instructors may be seen for consultation and for approval of plans of study, in rooms to be announced by posted bulletins.

PROGRAM LIMITATION

Plans of study are subject to the following regulations:

I. FOR STUDENTS IN THE SCHOOL OF LIBERAL ARTS AND THE CRANE THEOLOGICAL SCHOOL:

No Freshman shall take a program of more than sixteen term hours for the first half-year; nor shall a program of more than fifteen term hours be taken by any student who has received for the preceding half-year grade

L in subjects aggregating three term hours, or grade C in subjects aggregating more than six term hours; except that each student is permitted to take a program of eighteen hours in his Junior year, with the consent of his major instructor. But a student who has failed in a subject may repeat that subject, provided his program is not thereby increased to more than eighteen term hours.

A program in excess of eighteen term hours shall not be allowed except by special permission of the Faculty.

Physical Training is disregarded in the consideration of program limitation.

II. FOR STUDENTS IN THE ENGINEERING SCHOOL:

The Freshman program is prescribed. Permission to vary the Freshman program, to take a program in excess of eighteen term hours, or to take a subject out of course, must be obtained by petition to the Committee on Promotions.

PROGRAM

All subjects whose hours are not definitely fixed in the tabular program are so far as possible assigned at a meeting in Ballou 4 at 12 M. on the second day of the first half-year, and at the same hour on the first day of the second half-year. Every student concerned is required to be present at this time, either in person or by a proxy furnished with a complete tabular program of class engagements. Every instructor concerned is expected to be present in person. These appointments supersede all others. No assignment or change of hour is official except as posted by the Committee on Program.

Any instructor is permitted, after the second full week of a term, to transfer a subject to another program hour, under the following conditions: (a) all students taking the subject must have the new hour free; (b) previous notice must be given to the Committee on Program; (c) the change, if finally made, must be reported at the College Office.

If such a change can be made in two consecutive years, the subject may be permanently transferred to the new hour.

CHANGES IN REQUIREMENTS

It is the policy of the Faculty not to introduce changes in requirements without due notice in the catalogue, and not to impose additional requirements upon classes already in college. Immediate changes in the curriculum and in the program may occasionally be necessary, and under such circumstances the Faculty reserves the right to make equitable adjustment for students already in college.

PROMOTIONS

All candidates for degrees are classified as Freshmen until they have removed all entrance conditions.

Candidates for the degree of Bachelor of Arts or Bachelor of Science in the School of Liberal Arts must have received, for promotion to the Sophomore class, a credit of not less than twenty-four term hours, and for promotion to the Junior class a credit of not less than fifty-seven term hours. To become a member of the Senior class, a student must have completed all the prescribed work, and have credit for not less than eighty-seven term hours.

Candidates for the degree of Bachelor of Science in the Engineering School must have received, for promotion to the Sophomore class, a credit of not less than twenty-nine term hours; for promotion to the Junior class a credit of not less than sixty-four term hours; and for promotion to the Senior class a credit of not less than ninety-nine term hours.

GRADES OF SCHOLARSHIP

A student's rank is officially recorded by letters, as follows: **A,** excellent; **B,** good; **C,** fair; **L,** passed with low standing; **F,** work incomplete or unsatisfactory; **FF,** complete failure.

The mark **F** imposes a condition which must be removed at a date to be determined by the Committee on Promotions, on consultation with the instructor. In case a mark of **F** is not removed at the date thus determined, the entry will be changed to **FF.** The student must then discontinue any dependent subjects which he is taking, and can obtain a clear record only by repeating the subject in which **F** was given. The responsibility for the removal of the condition rests with the student, who is required to make the necessary arrangement with the instructor and to present at the office a statement from the instructor that the work has been accomplished.

Reports of the work of Freshmen are sent to parents after the first term. Reports for the year are sent in July to all.

Except as above stated, marks are not issued from the office. .

MAJOR SUBJECTS

Every candidate for the degree of Bachelor of Arts or Bachelor of Science in the School of Liberal Arts shall choose a major subject before the beginning of the Sophomore year.

A change of major subject may be made not later than the end of the Junior year, by vote of the Committee on Promotions on petition approved by the two major instructors concerned.

A second major subject may be granted not later than the end of the Junior year, under the same conditions.

HONORS

Final Honors will be conferred at Commencement upon any member of the graduating class in the School of Liberal Arts or in the Engineering School who shall have attained Grade A in approved subjects aggregating not less than eighteen term hours in a major department, and an average of Grade B in the collateral subjects. Subjects marked in the catalogue with an asterisk (*) will not count for Honors. Those marked with a double asterisk (**) will be counted for Honors only when special requirements, to be defined by the instructors, have been complied with. Final Honors will be conferred only upon recommendation of the head of the department in which Honors are desired.

Honorable Mention will be made, in the Commencement program and in the annual catalogue, of a student who has attained, during the two years immediately preceding graduation, Grade A in nine term hours and not less than Grade B in three additional term hours of approved work in one department. Subjects marked in the Catalogue with an asterisk (*) or with a double asterisk (**) are under the conditions explained above as applying to Final Honors.

Candidates for Honorable Mention are expected to report to the Office on or before May 1 the department or departments in which they look for such distinction.

The subjects open for Honors and Honorable Mention in the five major departments in the Engineering School are as follows: 45-1, 45-2, and 45-12 Applied Mechanics may be counted in any department; also, in the Civil Engineering department, all subjects in Civil Engineering (41) except 41-3 Surveying; in the Structural Engineering department, all subjects in Applied Mechanics (45) and Structural Engineering (47); in the Mechanical Engineering department, all subjects in Mechanical Engineering (51); in the Electrical Engineering department, all subjects in Electrical Engineering (61); and in the Chemical Engineering department, all subjects in Chemistry (35) except 35-1 General Chemistry.

ADMISSION FROM OTHER COLLEGES

Students who have pursued study in any other college of equal rank, and have been honorably dismissed therefrom, are admitted to Tufts College as unclassified students. They will not be assigned to a definite class until such time as the quality of their work in Tufts College shall have given a basis for rating. Such students must present satisfactory certificates showing the amount and character of work already accomplished, in order to obtain credit on a course of this College.

SPECIAL STUDENTS

Students who are not candidates for a degree, and who wish to pursue a special course of studies, in one or at the most two departments, will be admitted to the College, subject to the following regulations: —

1. Every Special Student shall choose a major department, and shall make up a plan of study under the direction and subject to the approval of the major instructor. If subjects are taken in two departments, they shall be allied.

2. The student shall satisfy the instructor in each subject included in the approved plan of study that he is able to pursue the work.

3. First-year Special Students are limited to sixteen program hours, and thereafter the same rules apply to them as to regular students.

4. A Special Student, on leaving College, shall be entitled to a certificate giving the grade attained in each subject pursued, and signed by the President and the Registrar.

TERMS AND VACATIONS

Commencement occurs on the third Wednesday in June, and the college year begins on the Thursday following the third Wednesday in September. The year is divided into two terms. College exercises are suspended on certain dates in accordance with the program published at the beginning of the catalogue. An examination period of five days is held at the close of each half-year, during which time the daily class exercises are suspended.

Students are required to report in person at the Registrar's office within two hours after the last program appointment of the student preceding each vacation of more than a single day, except at the mid-year period; and within two hours before the first program appointment following such vacation.

A fine of two dollars will be imposed on each student who shall fail to report as above provided. The regularly appointed registration of studies at the beginning of each term shall be construed as reporting in person.

ABSENCES

Students are required to notify the Registrar at the beginning of an absence from any cause involving more than three consecutive program appointments. This report may be made in advance, and should state the cause of absence and its probable duration. A similar report is to be made before entering upon college work after the absence.

These reports are for the information of the college authorities, and do not excuse the student from chapel attendance, nor from his obligations to the various instructors.

For the first failure to make such a report a fine of fifty cents shall be levied, and for each subsequent failure a fine of two dollars. In case of the absence of any student organization, notice may be given for all by one authorized representative.

No student organization shall be allowed to make engagements involving absence from college exercises unless such engagements are approved by the appropriate committee of the Faculty.

A report filed in accordance with these regulations shall not take the place of the required registration before and after vacations of more than a single day.

Absence from Examinations.—Students absent from examinations and requiring special examinations to make up for such absence are charged two dollars for each special examination.

OFFICE HOURS

The President may be found in his office in the morning from 8.45 to 9.45. The Dean of the School of Liberal Arts is in his office in Ballou Hall, and the Dean of Jackson College in her office in Miner Hall, throughout the forenoon, except for class engagements. The Dean of the Engineering School may be consulted at his office in the Bromfield-Pearson Building, between 11.00 and 1.00, and at other times by special appointments. The office of the Registrar is open every morning, from 8.45 to 1.00, and every afternoon except Saturday, from 2.00 to 5.00. The Bursar will be in his office in Ballou Hall during term time, Monday, Wednesday and Friday mornings, from 8.30 to 12.00 o'clock, and on Thursday afternoon from 2.00 to 5.00; and in his office in Miner Hall on Tuesday from 2.00 to 5.00 and Thursday from 8.30 to 12.00.

RELIGIOUS OBSERVANCES

Goddard Chapel, erected in 1882-83, is the gift of Mrs. Mary T. Goddard, as a memorial of her husband, the late Thomas A. Goddard. Attendance upon morning prayers is required.

The RUSSELL LECTURE, established in accordance with a bequest of the late James Russell of Arlington, is delivered before the Trustees, Faculty, and students, on the third Wednesday in November, by either a clergyman or a layman, on a subject prescribed by the testator.

Two subjects are presented, in alternate years.

The subject for 1912 was "*The Importance of Christian Faith and Belief in the Formation of the Character of the Good Citizen and the Good Man.*"

The subject for 1913 is "*The Sufficiency of the Promises of the Gospel to meet the Reasonable Wants of Man both in Time and in Eternity.*"

TUFTS COLLEGE STUDIES

A publication called "Tufts College Studies" has been established, as a means of presenting to the world the results of original work done in the different departments of the College. The numbers, which are issued as material is ready, are distributed to educational institutions and learned societies. The College desires to establish regular exchanges of these Studies with publishing institutions at home and abroad. Correspondence regarding exchanges should be addressed to the Librarian of Tufts College. One volume and two numbers of a second volume of the scientific series have been issued, and a single number of the English series. The editorial board of TUFTS COLLEGE STUDIES for the current year is made up of the President of the College and Professors Metcalf, Kingsley, Rockwell and Wade.

ATHLETICS

The supervision of all athletic sports is vested in a Board of Directors of Athletics, consisting of nine members, three of whom are appointed from the Faculty, three from the Alumni, and three elected from the undergraduates. This board through its sub-committees controls the expenditure of all moneys, the hiring of coaches, the arranging of games, the eligibility of players, and generally seeks to raise all college sports to a level of genuine usefulness. The Director of the Gymnasium limits the candidates for college teams to those students who have shown by a physical examination that they are qualified to engage in strenuous exercise.

EXPENSES

The charge for instruction in the School of Liberal Arts is *one hundred twenty-five dollars* a year, or *five hundred dollars* for the full course whether it be completed in three, four, or more years. A registration fee of five dollars is charged to all students entering the School of Liberal Arts or the Engineering School.

The tuition fee for every student who entered the Engineering School in 1911–1912 or earlier is *one hundred and fifty dollars* a year, or *six hundred dollars* for the course. For students entering for the first time in 1912–1913 or thereafter the tuition fee is *one hundred and seventy-five dollars* a year, or *seven hundred dollars* for the course.

In the case of students admitted to advanced standing, the fees will be based upon the amount of work done under the direction of Tufts College.

No part of the fees and charges for a term is returnable to the student if he leaves during the term.

Students in the chemical laboratories are charged for breakage, and not more than *four dollars* a term for chemicals used, according to the subjects taken. A fee of *two dollars and a half* a term is required for each laboratory course in the Department of Biology, and a fee of *four dollars* a term for each laboratory course in the Departments of Geology and Mineralogy.

Half room-rent, including heat, ranges from twenty-five to eighty dollars, in the several dormitories. Students furnish their own rooms. Any special damage done by students to college property is charged in the term bills. All damage to dormitories other than normal wear is charged to the occupants. Rooms in the college halls will be open for occupancy of students on and after the Wednesday of the week preceding the opening of the college year, and will be closed on the Wednesday after Commencement. Non-resident students in all departments, except the Medical and Dental Schools, are subject to a fixed annual charge of ten dollars.

Students may obtain the use of day-rooms in the dormitories by arrangement with the Bursar, on payment of a moderate fee.

Payment of tuition, room rent, and other charges in all departments of the College is made in advance for each half-year, on or before November first and March first, but a payment of fifty dollars on the bills due November first will be required of all students on or before October first.

All college charges are payable to the Bursar, and all arrangements with regard to rooms are to be made with him. The Bursar must certify that all college charges have been met before a student can receive his degree or a letter of honorable dismissal.

The Executive Committee of the Trustees has power to order the suspension or dismissal of a student for failure to keep his bills promptly paid, or for other good and sufficient cause.

In consideration of a hospital fee of *four dollars* per year resident students will be given free hospital treatment in cases of illness or accident, provided that the cost to the College of such treatment shall not exceed seventy-five dollars for any one person in any one year. Except in cases of emergency, doctors are to be called and hospital arrangements made through the college office. In cases of accident or sudden illness, immediate attendance may be called by the student or his friends; arrangement for continuance of care will be made through the office.

The following estimates represent the fixed annual expenses, not including room-rent or the non-resident fee:—

	School of Liberal Arts	Engineering School
Tuition	$125.00	$175.00
Physical Training, including gymnasium and grounds, and T.C.A.A. ticket	15.00	15.00
Reading-room	1.00	1.00
Hospital	4.00	4.00
Board, $4.50 a week (36 weeks)	162.00	162.00
Total	$307.00	$357.00
Registration fee, at the beginning of the course	$5.00	$5.00

Special students in the School of Liberal Arts pay the initial registration fee and $20.00 a term for each subject of three hours a week or less, together with the usual laboratory fees.

STUDENTS' DRAFTS

The College issues drafts for the use of students in books of twenty-five to fifty dollars. These are freely negotiable in the college community and are becoming so in all banks and stores in greater Boston. No commission is charged, and the holder is protected from loss or theft. The drafts are for sale at the Bursar's office and at the College Book Store.

INSURANCE

Arrangements may be made through the Bursar's office whereby students in any of the dormitories can insure their personal effects, including books, furniture, and wearing apparel. The cost of such insurance is fifty cents for one hundred dollars for one year. Insurance is placed only in multiples of one hundred dollars; no risk is taken for less than one hundred dollars, and all premiums are payable in advance.

THE DORMITORIES

East, West, Dean, Paige, and Curtis Halls are arranged with convenient rooms in suites, are warmed by steam, lighted by gas or electricity, and have good modern plumbing. These halls provide rooms for two hundred and fifty men.

REGULATIONS CONCERNING COLLEGE ROOMS

The annual assignment of rooms will take place in the month of May, at a time appointed by the Bursar, due notice being given upon the official bulletin board. Students occupying any room may retain it for the following academic year by signing a new room-agreement. All rooms not thus provided for will be offered for rent to members of the three upper classes. Rooms not assigned at the annual allotment will be open for choice to members of the entering class, in the order of application.

The right to occupy a college room is given only to the student or students to whom it is assigned: neither exchanges nor transfers of rooms are allowed, except by consent of the Bursar.

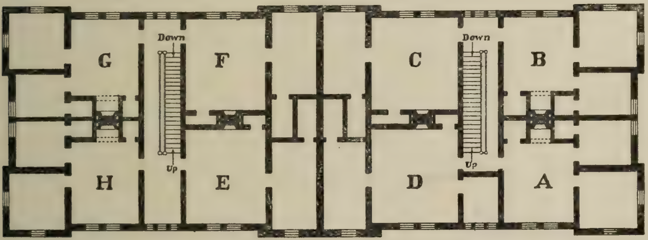
All rooms are for two students, except East 3, 12, 19, 22, 27, and 32, West 16½, and Curtis 4 and 12, and all rooms in Paige, which are for a single student each. Where more than two students occupy a room, the rent will be increased proportionately.

Each student receives his key on payment of fifty cents, which is refunded on the return of the key at the close of the college year.

The prices given for room rent in the lists below are for the whole room during the academic year, and include heat and care. The rooms are lighted with gas; Paige Hall has electricity also. Each suite is metered separately, and the occupants pay for the gas actually consumed. None of the rooms is furnished.

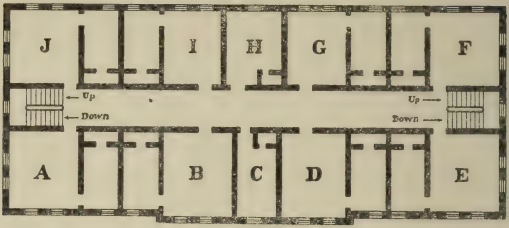
Room rent is in accordance with the following diagrams and prices:—

WEST HALL



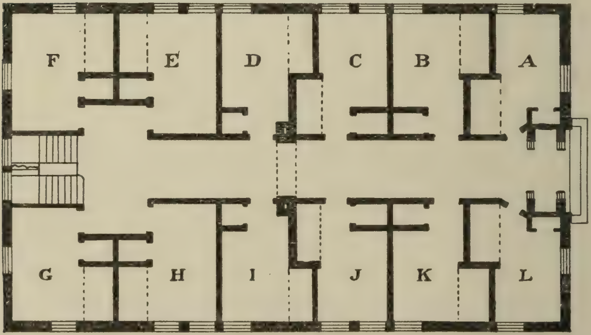
FIRST FLOOR	SECOND FLOOR	THIRD FLOOR	FOURTH FLOOR
A 1 . . $128	A 5 . . $160	A 9 . . $140	A 13 . . $96
B 2 . . 102	B 6 . . 128	B 10 . . 118	B 14 . . 80
C 3 . . 92	C 7 . . 100	C 11 . . 96	C 15 . . 74
D 4 . . 128	D 8 . . 150	D 12 . . 140	D 16 . . 96
E 17 . . 128	E 21 . . 150	E 25 . . 140	E 29 . . 96
F 18 . . 92	F 22 . . 100	F 26 . . 96	F 30 . . 74
G 19 . . 102	G 23 . . 128	G 27 . . 118	G 31 . . 80
H 20 . . 128	H 24 . . 160	H 28 . . 140	H 32 . . 96

EAST HALL



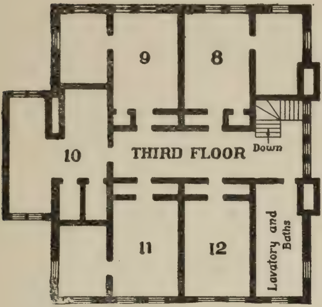
BASEMENT	FIRST FLOOR	SECOND FLOOR	THIRD FLOOR
A	A 6 · · $ 96	A 15 · · $110	A 25 . . $102
B	B 7 . . 92	B 16 · · 110	B 26 · · 100
C	C	C 17 · · $43	C 27 . . 40
D	D 8 · · 92	D 18 · · 110	D 28 · · 100
E	E 9 . . 100	E 19 · · 118	E 29 . . 110
F · · $160	F 10 . . 100	F 20 · · 110	F 30 · · 100
G 2 . . 55	G 11 . . 80	G 21 · · 86	G 31 . . 80
H 3 · · 30	H 12 . . 40	H 22 . . 43	H 32 . . 40
I 4 · · 55	I 13 . . 80	I 23 . . 86	I 33 · · 80
J 5 . . 60	J 14 . . 86	J 24 · · 90	J 34 · · 86

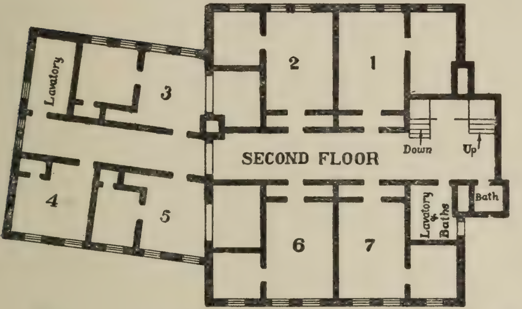
PAIGE HALL



In Paige Hall the plan of each floor is the same. From A to L, the rooms are numbered from 1 to 12 on the first floor; from 13 to 24 on the second, and from 25 to 36 on the third floor. The price for each room is $75.

CURTIS HALL

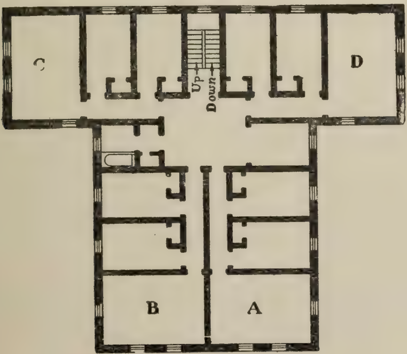




1 . .	$80	4 . .	$ 50	7 . .	$85	10 . .	$85
2 . .	80	5 . .	100	8 . .	85	11 . .	85
3 . .	90	6 . .	85	9 . .	85	12 . .	45

Nos. 4 and 12 are single rooms.

DEAN HALL



DEAN HALL

(See previous page for plan)

FIRST FLOOR		SECOND FLOOR		THIRD FLOOR		BASEMENT	
A 1	$160	A 5	$160	A 9	$160	A 13	$85
B 2	160	B 6	160	B 10	160	B 14	85
C 3	160	C 7	160	C 11	160	C	
D 4	160	D 8	160	D 12	160	D	

SCHOLARSHIPS

Awards of scholarships are made by the Board of Trustees, on the recommendation of the Faculty. Applications for scholarships must be filed with the Registrar on blanks furnished for the purpose, on or before the first day of October; and, if the applicant be a minor, must be sanctioned by his parent or guardian. Grants of aid will apply only for the year in which granted, and will not in themselves be ground for continuance of assistance. If scholarship aid is desired during the following year, a new application must be filed.

All students desiring scholarships will be requested to file answers to specific questions on a blank provided for this purpose. In the case of a new student this blank must be accompanied by a letter from the principal of the school last attended, containing a statement as to the applicant's character and especially as to his standing as a student. In order to enable students to make financial plans for their first year these papers may be filed during the summer vacation, and the applicant may, if there appears to be real need and good ability, receive assurance of aid for the first half of the Freshman year.

After the first half of the Freshman year, continuance of aid will depend upon the student's need and the grade of his work. Students are required to attain for graduation a grade of at least C in a certain proportion of their work. No student is considered eligible for scholarship aid who has, in the preceding year or term, failed to meet this requirement.

The following conditions must be strictly observed by the applicant:

(a) His expenditure must be moderate, and strictly in accordance with his declaration of limited means.

(b) He must be regular in attendance.

(c) He must be guilty of no behavior reflecting upon his moral character or subversive of good order in the College.

Applicants residing in college dormitories will be given preference over those residing at home.

Scholarships are available for those students only whose term bills are fully paid within ten days after such bills shall have become due.

The following scholarships have been founded in the College. Except in special cases, when the donor has otherwise stipulated, the Trustees will award scholarship aid in such sums as they may determine in each case.

THREE STATE SCHOLARSHIPS.—Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS.—Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS.—Established in honor of the late William J. Walker, M.D., of Newport, R. I., and payable from the income of the Walker Fund.

TWO MOSES DAY SCHOLARSHIPS.—Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP.—Founded by the late Alonzo Ames Miner, D.D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP.—Founded by the late Charles Robinson, LL.D., of Newton.

THE WILLIAM OSCAR CORNELL SCHOLARSHIP.—Founded by William Oscar Cornell, of Providence, R. I.

THE LAURA A. SCOTT SCHOLARSHIP.—Founded by Mrs. Laura A. Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP.—Founded by the late Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP.—Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP.—Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP.—Founded by Mrs. Emma R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP.—Founded by the late Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP.—Founded by the late Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP.—Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram H., Augustus, and Frank Simons.

THE AMASA AND HANNAH L. WHITING SCHOLARSHIP.—Founded by the late Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP. — Founded by the late Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP.—Founded by Mrs Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP. — Founded by the late Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP.—Founded by the late John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP.—Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP.—Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP.—Founded by the late Henry Rollins, of Bangor, Me.

THE J. H. MORLEY MEMORIAL SCHOLARSHIP.—Founded by Herbert Small Morley, of Templeton.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP.—Founded by friends of the late Edwin Hubbell Chapin, D.D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP.—Founded by the late Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU, 2D, MEMORIAL SCHOLARSHIP.—Founded by the late Mrs. Mary T. Goddard, of Newton.

THE HENRY E. COBB SCHOLARSHIP.—Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP.—Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP.—Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE JOSEPH D. PEIRCE MEMORIAL SCHOLARSHIP.—Founded by the children and other relatives of the late J. D. Peirce, D.D., of Attleboro.

TWO SIMMONS SCHOLARSHIPS.—Founded by the will of Robert F. Simmons, of Attleboro, in the name of Mary F. and Robert F. Simmons.

THE JOSHUA S. AND HARRIET N. WHITE SCHOLARSHIP.—Founded by the late Joshua S. White, of Pawtucket, R. I.

THE JOHN B. PERKINS SCHOLARSHIP. — Founded by Ann Maria Perkins, of Medford.

THREE BARNARD SCHOLARSHIPS.—Founded by the late Mrs. Caroline M. Barnard, of Everett.

THE RICHARD PERRY BUSH SCHOLARSHIP.—Founded by the late Mrs. Caroline M. Barnard, of Everett.

THE BARTLETT SCHOLARSHIP.—Founded by the late Mrs. Nancy Bartlett, of Milford.

THE B. H. DAVIS SCHOLARSHIP.—Founded by the Rev. B. H. Davis, of Weymouth, for the benefit of students of the College of Letters who are preparing to enter the Christian ministry.

THE LATIMER W. BALLOU SCHOLARSHIP.—Founded by the late Latimer W. Ballou, of Woonsocket, R. I.

THE NATHANIEL WHITE SCHOLARSHIP.—Founded by Armenia S. White, of Concord, N. H.

THE LIZZIE P. ALLEN SCHOLARSHIP.—Founded by the late Lizzie P. Allen, of Derby Line, Vermont.

THE RHODE ISLAND SCHOLARSHIP.—Founded by several persons in Rhode Island.

TWO CHARLES AND FANNIE A. MINER BOOTH SCHOLARSHIPS.—Founded by the late Charles Booth, of Springfield, Vermont.

THE LUTHER GILBERT SCHOLARSHIP.—Founded by the late Mrs. Luther Gilbert, of Roxbury.

THE ORMSBEE CLASS SCHOLARSHIP.—Founded by Benjamin F. Smith, of Pawtucket, R. I.

THE JAMES M. AND EMILY COOK SCHOLARSHIP.—Founded by Henrietta J. States, of Boston.

THE WILLIAM H. SHERMAN SCHOLARSHIP.—Founded by the late William H. Sherman, of Cambridge.

THE DAVIS COOK SCHOLARSHIP.—Founded by the late Davis Cook, of Cumberland, R. I.

THE AUSTIN B. FLETCHER SCHOLARSHIP.—Founded by Austin Barclay Fletcher, of New York City.

THE JONAS CLARK WELLINGTON SCHOLARSHIP.—Founded by Mrs. Sarah C. Fisher Wellington, of Cambridge.

THE MARY L. GROCE SCHOLARSHIP.—Founded by the late Mary L. Groce, of Roxbury.

THE JOHN MURRAY SPRAGUE AND ELIZA FLETCHER SPRAGUE SCHOLARSHIP.—Founded by the late John Sprague, of Lowell.

THE MARY A. RICHARDSON SCHOLARSHIP.—Founded by the late Mrs. Mary A. Richardson, of Worcester.

TWO WARREN SCHOLARSHIPS.—Founded by the late Dr. Ira Warren, of Boston.

TRUSTEE SCHOLARSHIPS.—A limited number of special scholarships of one hundred dollars each are available for needy students in the School of Liberal Arts who reside in college dormitories.

The following scholarships of fifty dollars each are awarded annually:—

THE A. A. MINER SCHOLARSHIP.—Founded by the late Alonzo Ames Miner, D.D., of Boston.

THE PERKINS SCHOLARSHIP.—Founded by James D. Perkins, of New Rochelle, N. Y.

THE MOSES DAY SCHOLARSHIP.—Founded by the late Moses Day, of Roxbury.

THE JOSEPH H. WALKER SCHOLARSHIP.—Founded by Joseph H. Walker, of Worcester.

THE GEORGE C. THOMAS SCHOLARSHIP.—Founded by George C. Thomas, of Philadelphia, Pa.

THE ALBERT W. SAYLES SCHOLARSHIP.—Founded by the late Albert W. Sayles, of Lowell.

THE LIZZIE P. ALLEN SCHOLARSHIP.—Founded by the late Lizzie P. Allen, of Derby Line, Vermont.

THE CHARLES A. AND CORNELIA B. SKINNER SCHOLARSHIP.—Founded by the late Rev. Charles A. Skinner, D.D., and Mrs. Cornelia B. Skinner, of Cambridge, Mass.

THE GEORGE STEVENS BALLARD SCHOLARSHIP.— Founded by the late Caroline D. M. Ballard, of Augusta, Me.

The following scholarships are awarded under special conditions:—

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY.—Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with at least a fair degree of attainment, the greatest improvement in Oratory.

THE WENDELL PHILLIPS MEMORIAL SCHOLARSHIP.—Founded to perpetuate the name, fame, and influence of Wendell Phillips. This scholarship is to be awarded to a student who has completed the Freshman and Sophomore years, and he is to have the benefit of it during the remainder of his course. The beneficiary must be of sound body, high character, and ability in declamation and debate, and must comply with certain special conditions, including participation in a competitive debate of the applicants at the end of the Sophomore year. The specific conditions governing the award of this scholarship may be obtained by those intending to apply therefor from the Secretary of the Faculty, to whom application should be made early in the Sophomore year. The income of this scholarship is at present seventy dollars.

THE MOSES TRUE BROWN SCHOLARSHIP.—A scholarship yielding fifty dollars annually, founded by the late Moses True Brown, of Sandusky, Ohio, formerly Professor of Oratory in Tufts College, for encouraging and assisting worthy students in the department of Oratory.

The Prize Scholarship of the Class of 1898.—The sum of fifty dollars is given annually by the Class of 1898 to that Senior who at the end of the Junior year shall have maintained the highest excellence in a course of study broadly and wisely chosen.

The Prize Scholarship of the Class of 1882. — The sum of one hundred dollars is given annually by the class of 1882 to that member of the College who best exemplifies the combination of ability in athletics and excellence in scholarship.

PRIZES

Goddard Prizes.— Three prizes of fifteen dollars each are assigned annually from the Goddard Prize Fund. In 1912–13 these prizes were awarded in the departments of French, Economics, and Chemistry, under the following conditions:

Biology.—The prize will be awarded to that student in either Biology 2 or 3 who, in the year's work, shows the clearest understanding of the fundamental facts and can best apply them to the solution of various questions.

English.—A prize for the best treatment of a theme by any student in the department of English on a subject to be approved by the head of the department.

Philosophy.—The prize will be awarded to the student who submits the best essay on: Plato as a Political Reformer.

Rhetorical Prizes.—Three prizes are awarded as follows:—

A first prize of forty dollars, a second prize of thirty dollars, and a third prize of twenty dollars. The preliminary competition will be open to all candidates for the degree of A.B., B.S., and B.D.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory. A preliminary competition is held about ten days before the competition announced in the calendar, at which a committee of the Faculty determine the contestants in the final and public readings.

The foregoing prizes are not awarded, unless in the opinion of the respective judges there is sufficient merit in the several contests to warrant their distribution.

THE DE WITT C. TOMLINSON PRIZE SCHOLARSHIPS.— Founded by Rev. Irving C. Tomlinson, of Brookline, Mass.

Two prizes of thirty and twenty dollars respectively, for the two best essays on the subject of "The Ministry of Christ Jesus." The award of prizes must take into account (1) literary merit; (2) evidence of thorough study, clear insight, and unbiased understanding of the Biblical records of the ministry of Christ Jesus; (3) the treatment of the public and private ministration to those of his own time; (4) the treatment of the universal application of his ministry to all human needs, and (5) the treatment of the means by which the benefits of his ministry may be appropriated by his followers.

These prizes are open to Seniors in The School of Liberal Arts, the Engineering School, the Theological School, and Jackson College, and to members of the Graduate School. Details as to conditions of competition may be obtained at the Secretary's office.

A regular day has been appointed for the annual announcement of the award of prizes and the assignment of Commencement parts,— Wednesday of the week preceding the Thanksgiving recess.

COMMITTEE ON STUDENT EMPLOYMENT

It is the object of the committee on student employment to inform students concerning positions which may give regular occupation during available hours of term time, or which may be temporarily filled during the vacation periods. Students who wish to make application for any occupation should register their names, with a statement of their qualifications for any special work, with MR. FRANK E. SEAVEY, Chairman of the Employment Committee, Curtis Hall.

Buildings and Equipment

The College buildings are twenty in number. Ballou Hall contains recitation-rooms, and the offices of the President, the Dean, the Registrar, and the Bursar. It contains also the college bookstore. Other buildings are Barnum Museum; Goddard Chapel; Goddard Gymnasium; the Eaton Library; the Chemical Building; Jackson Gymnasium; three dormitories,—East Hall, West Hall, Dean Hall, for men; Curtis Hall, containing the post-office, class-rooms, and rooms for students; Metcalf Hall, and Start and Richardson Houses, for students of Jackson College. The Bromfield-Pearson School building is available for technical courses of the College. Two buildings, Packard Hall and Paige Hall, are devoted to the use of the Theological School. Robinson Hall provides for work in certain of the physical sciences. A power-house has been added, which supplies light, heat, and power to the engineering buildings.

The new library building, erected through the gift of one hundred thousand dollars by Mr. Andrew Carnegie, is now occupied. At the suggestion of Mrs. Carnegie it is called the Eaton Memorial Hall, in honor of Charles Henry Eaton,'74, former pastor of the Church of the Divine Paternity, New York City.

In the summer the gates in the wire fence surrounding the buildings are closed at 5 P.M. on week days and all day Sunday.

EATON LIBRARY

In all, about sixty-eight thousand bound volumes and fifty-four thousand pamphlets are available for use. The College regularly receives more than two hundred periodicals. By favor of the late Senator Hoar the library is a depository for government publications. In the library building a reading-room, maintained by the students, supplies the daily and weekly papers. The student fund also provides a number of the popular and the more technical magazines. Separate rooms have been provided with facilities for the use of students working in the departments of History and Public Law, the Ancient Languages, the Modern Languages, Music, English, the Fine Arts, Philosophy, Political Science, Physics and Mathematics. The average annual increase by donation and purchase, for the last five years, has been about two thousand six hundred volumes.

In the general library is the collection of the Universalist Historical Society (six thousand volumes and several thousand pamphlets), to which, on application, students have free access. In Packard Hall is a selected reference library, for the use of theological students. In the Barnum Museum is the department library of Natural History, numbering more than thirty-three hundred volumes and over eight thousand pamphlets. The Metcalf Musical Library is divided between the music rooms in Goddard Gymnasium, where the scores are kept, and the department room in the Eaton Memorial Library, which contains the collection of English works relating to music. About four hundred representative musical compositions, in form for use upon the automatic instruments in the music rooms, are available to students.

The library is open to all members of the College daily except Sundays and holidays, from 8.00 A.M. to 5.30 P.M.

BARNUM MUSEUM

The Barnum Museum of Natural History was built in 1883–84 by the late Phineas T. Barnum, who gave the College a fund for its maintenance and for the addition of two wings to the central building. One of these wings has been erected. In addition to laboratory rooms, it affords space for the display of the mineralogical and geological collections.

The College is also indebted to Mr. Barnum for the larger portion of its zoological collection. This serves to illustrate all groups of the animal kingdom, and is especially rich in skeletons and mounted skins of mammals, the whole being well adapted for the purposes of instruction. The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the southern and western States. The geological collection contains representatives of the various types of rocks, as well as of fossils from all formations. The mineralogical collection embraces fine examples of most of the species.

The laboratories and lecture-rooms of the department of Geology are in the main Museum building. The geological laboratory is provided with petrological microscopes, instruments for making rock sections, and other instruments. The mineralogical laboratory possesses the apparatus necessary for the determination of minerals, the analysis of ores, and assay work. The biological laboratories are in the main building and in the newly-erected wing. The laboratories for elementary work are furnished with all necessary facilities, while the laboratory for advanced and research work has all the appliances needed for investigation on the lines of anatomy, histology, and embryology.

The Barnum Museum is open for the inspection of visitors from 8.30 A.M., to 5.00 P.M., every day except Sundays and legal holidays.

GODDARD GYMNASIUM

Goddard Gymnasium, the gift of Mrs. Mary T. Goddard, is well adapted to provide the prescribed class and individual work, and to furnish wholesome physical exercise for all. It is fitted with the apparatus usually seen in a good modern gymnasium, including facilities for light and heavy gymnastics, fencing, wrestling, basket ball, base ball, and the many indoor athletic sports. In the offices is a full set of anthropometric instruments for the physical examination of all students. There is a large gallery, with padded running track twenty-four laps to the mile. The dressing rooms, lockers, and baths are well lighted and commodious. The building is heated by steam and lighted by electricity.

The third floor is occupied by the department of Music.

ATHLETIC FIELDS

The old campus is just outside the gymnasium, and on it are tennis-courts, two base-ball diamonds, a foot-ball field, and a board track. Its close proximity to the Gymnasium is of great advantage.

Tufts College Athletic Field is the large inclosed field on

College Avenue, where inter-collegiate contests are played. It includes two base-ball diamonds, a foot-ball field, and a quarter-mile, twenty-foot cinder track, for track athletics. Tennis-courts and a separate gymnasium are provided for women students, not far from Metcalf Hall.

While athletics are encouraged and generously supported by the College, they are made subsidiary to the requirements of the curriculum, thus safeguarding the best interests of the student.

CHEMICAL BUILDING

The building of the department of Chemistry contains laboratories for general inorganic, organic, analytical, and metallurgical chemistry, a large lecture-room, library, and weighing room, and the private laboratories of the professors in charge. The rooms are provided with modern laboratory conveniences, and are well supplied with apparatus and chemicals.

ROBINSON HALL

Robinson Hall is a memorial to the late Charles Robinson, and is designed for the use of the Engineering School. It contains the physical and engineering laboratories, a lecture hall, reception rooms, and offices of instructors. It is lighted throughout by gas and electricity, and heated from an adjoining steam plant by direct and indirect methods.

The Laboratory of General Physics is provided with the necessary apparatus for quantitative work in mechanics, sound, light, heat, electricity and magnetism.

The Electrical Testing Laboratories are well equipped for general electric testing. The apparatus includes various makes of ammeters, voltmeters, wattmeters, galvanometers, resistance boxes, bridges, condensers, and standards of resistance, capacity and electromotive force. A storage battery supplies direct current at any pressure from two to one hundred and twenty volts, and in addition the testing rooms receive both direct and alternating currents from the Power House, and alternating current from the Edison Electric Illuminating Company.

Connected with the laboratories is a photometer room of ample size for the photometry of arc and incandescent lamps and provided with apparatus of the latest pattern.

The Transformer Room contains eight new transformers of the General Electric Company; a ten-kilowatt Thomson welder; two five-kilowatt testing transformers, one of ten thousand volts, the other of fifty thousand volts; and a number of smaller and less modern pieces of apparatus.

The Dynamo Testing Room contains a considerable variety of machinery, all electrically driven. Some of the more important machines are a General Electric University Alternator capable of being used as a generator, synchronous motor, or induction motor for one, two, or three phase currents; a high frequency motor generator set with which any periodicity up to one thousand cycles per second can be obtained; two railway motors coupled for testing; two direct-current arc light generators; two and three phase induction motors; a pair of two kilowatt double current generators specially designed for laboratory purposes; and a synchronous motor with phase indicating device.

The Mechanical and Hydraulic Laboratories are in the basement, of which the greater part is above ground, thus assuring good light and freedom from dampness. These rooms contain the testing machines and other apparatus for experimental mechanics, together with the pumps, tanks, and accessories of the hydraulic laboratory. There are three machines for testing the strength of material, their capacity being 150,000, 60,000 and 10,000 lbs.

The Steam Engineering Laboratory contains a small Corliss engine provided with an Admiralty condenser; a 15-kilowatt Curtis steam turbine generator; a 6x6 plain slide valve engine used for valve setting and for running a belted air compressor; an oil testing machine; measuring and weighing tanks; apparatus for testing steam engine indicators, gauges and injectors; apparatus for determining the amount of steam or air flowing through orifices; also planimeters, calorimeters, and indicators. The steam engines, gas engine, and the boiler, in the power station, are also arranged and equipped for testing. A carefully constructed experimental model of the Stevenson Link motion, provided with every possible adjustment, affords ready means for verifying valve diagrams.

THE POWER STATION

The Power Station is equipped with a one hundred and twenty-five horse-power boiler, which supplies heat and power to the engineering buildings. It is also piped and equipped for experimental work in steam engineering; and may be run by forced or natural draft. A forty-horse power Harrisburg Standard engine directly coupled to a direct current General Electric generator; a twenty-five horse-power Sturtevant engine directly coupled to a Mordey alternator, and a storage battery of sixty elements furnishes current for lighting, power, and experimental purposes.

An extension to this building provides accommodation for such of the equipment of the Mechanical Engineering Department as cannot be accommodated in Robinson Hall. This includes a twenty-five horse-power Buckeye engine with an Alden absorption dynamometer; a ten horse-power Columbia gas engine belted to a direct current generator; a four-cylinder thirty horse-power Johnson automobile engine of the Renault type; and a variety of small gas engines. The gas engine equipment also includes an automobile and motorcycle testing plant. The forge shop is also located in this building.

BROMFIELD-PEARSON BUILDING

The Bromfield-Pearson Building contains the offices, recitation rooms, lecture and drafting rooms required for conducting the special courses of the Bromfield-Pearson School. It is also equipped for the departments of Drawing and Mechanic Arts in the Engineering School. Abundant and uniform light is provided, and the drafting rooms are separated from the noise and confusion of the shops. One end of the building is used exclusively by the pattern and machine shops, and both are well equipped with modern tools and facilities for conducting the class work in mechanic arts. Electricity from the college plant is used for lighting and power throughout the building.

SCHOOL OF LIBERAL ARTS

Faculty

WILLIAM L. HOOPER, A.M., Ph.D., Acting President

FRANK G. WREN, A.M., Dean
Walker Professor of Mathematics

WILLIAM H. REED, Jr., A.M., Secretary
Assistant Professor of Modern Languages

EDWIN C. BOLLES, Ph.D., D.D., LL.D.
Dickson Professor of English and American History

CHARLES E. FAY, A.M., Litt.D.
Wade Professor of Modern Languages

WILLIAM G. TOUSEY, A.M., S.T.D.
Professor of Logic and Ethics

J. STERLING KINGSLEY, Sc.D.
Professor of Biology

RICHARD JONES, Ph.D.
Professor of English Literature

ALFRED C. LANE. A.M., Ph.D.
Pearson Professor of Geology and Mineralogy

LEO R. LEWIS, A.M.
Professor of the History and Theory of Music

FRANK W. DURKEE, A.M.
Professor of Inorganic Chemistry

WILLIAM K. DENISON, A.M.
Professor of the Latin Language and Literature

FRED D. LAMBERT, A.M., Ph.D.
Assistant Professor of Biology

HENRY C. METCALF, Ph.D.
Jackson Professor of Political Science

KARL SCHMIDT, A.M., Ph.D.
Professor of Philosophy

CHARLES ST. CLAIR WADE, A.M.
Professor of the Greek Language and Literature

LUCIUS M. BRISTOL, A.M., S.T.B.
Assistant Woodbridge Professor of Applied Christianity

WILLIAM R. RANSOM, A.M.
Professor of Mathematics

ALBERT H. GILMER, A.M.
Instructor in English

ARTHUR I. ANDREWS, PH.D.
Professor of History

PHILIP H. COBB, PH.D.
Assistant Professor of Physical and Organic Chemistry

*PHILIP M. HAYDEN, A.B.
Professor of French

HENRY H. MARVIN, B.S., PH.D.
Assistant Professor of Physics

M. D. LIMING, A.M.
Assistant in Political Science

FRANK W. POTE, B.S.
Instructor in Physics

HUGH W. PUCKETT, A.M.
Instructor in German

NATHANIEL H. KNIGHT, B.S.
Instructor in Physics

CROSBY F. BAKER, M.S.
Instructor in Chemistry

OSCAR MARTIN, M.D.
Instructor in Physical Training

Standing Committees

PROMOTIONS: Dean Wren, *Chairman;* Professors Durkee, Andrews, Denison, and Reed.

CURRICULUM: Dean Wren, *Chairman;* Professors Fay, Denison, Metcalf, and Durkee.

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* Absent on leave.

Requirements for Graduation

Students may enter upon their work in the courses of liberal arts as candidates for the degree of Bachelor of Arts, or Bachelor of Science. In every case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Students determine the general direction of their work by their choice of course. They are thereby brought into personal advisory relations with their respective major instructors, under whose guidance they arrange their programs with reference to their individual needs and aims. All work actually accomplished by the student in regular standing counts toward the attainment of the degree.

SYNOPSIS OF THE REQUIREMENTS FOR GRADUATION *

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Science is the satisfactory completion of subjects aggregating one hundred and twenty-two term hours, including physical training.†

(2) Students are required to attain for graduation a grade of at least C in seventy-two term hours.‡

(3) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student will be granted a degree in less than four years of residence, unless he shall have obtained grade B as an average for his entire work.

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* Each department offers a series of subjects for study. The unit indicating the requirements is the *term hour*, which represents a subject pursued one hour a week for one half-year. Thus a subject calling for three hours a week for one term represents a requirement of three term hours; if it calls for three hours a week for one year, or two terms, the requirement in that subject is six term hours.

†An acceptable Commencement part counts as an elective in the second half of the Senior year.

‡ For the meaning of grade C, see "Grades of Scholarship" under "General Information."

Courses of Instruction

The courses offered are as follows:

I. A general course, largely elective, leading to the degree of Bachelor of Arts.

II. A General Science Course, and a Chemistry Course, largely prescribed, leading to the degree of Bachelor of Science.

III. Eight courses arranged for students proposing to prepare for advanced study in certain lines, or to enter upon certain occupations. These courses lead to the degree of Bachelor of Arts for students who present an advanced ancient language for admission, and who choose their electives so as to fulfil the requirements for that degree; others satisfactorily completing any one of these courses receive the degree of Bachelor of Science.

I. GENERAL COURSE LEADING TO THE DEGREE OF BACHELOR OF ARTS

The plan of study aims to furnish, in its prescribed subjects, the essentials of a liberal education, and at the same time a large opportunity for election.

The following subjects are prescribed: —

	Term Hours
Languages (Latin, Greek, French, German: each student to take *three*)	18
English	6
Mathematics	6
Physical Science (Physics, Chemistry, Biology: each student to take *one, or two*)	12
Mental and Moral Science (of the three departments, Philosophy, Political Science, and History and Public Law, each student must take work in *at least two*)	12
Physical Training	2
A total of	56

The requirements are by groups, not by special subjects, and in each group except English and Physical Training some choice is allowed the student.

A normal Freshman program includes English, Mathematics, an ancient language, a second foreign language, and a physical science, together with Physical Training. All Freshman programs are subject to the approval of the Committee on Promotions.

At the end of the first year the student is required to choose a major department in which he must complete, before graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the prescribed groups as a part of the eighteen hours which he is required to give to his major department, but no subject indicated in the catalogue as elementary can be counted in such work.

The student shall further complete eighteen term hours in subjects approved as collateral with his major subject; that is, subjects tending to strengthen and to assist his work in his major.

The remaining term hours of the required aggregate are to be made up by the election of the student from the various subjects offered, limited only by special restrictions applied to certain subjects.

II. COURSES IN GENERAL SCIENCE AND CHEMISTRY

GENERAL SCIENCE

The course in General Science is designed to prepare students for positions as teachers of Science in the secondary schools, or for graduate work in Physics, Chemistry, or Biology.

FRESHMAN YEAR

First Term		Second Term	
English 1	3	English 2	3
Mathematics 3	3	Mathematics 1	3
German or French	3	German or French	3
Physics 1	3	Physics 1	3
Chemistry 1	3	Chemistry 1	3

SOPHOMORE YEAR

First Term		Second Term	
Biology 2 or 3	3	Biology 2 or 3	3
Chemistry 35-2	2	Chemistry 35-3	2
Physical Laboratory 24-14	3	Mathematics 5	2
Mathematics 4	3	French or German	3
French or German	3	Elective	4

JUNIOR YEAR

First Term		Second Term	
Biology 3 or 2	3	Biology 3 or 2	3
Chemistry 4	3	Chemistry 4	3
Geology 21	1	Physics 2	3
Geology 22	2	Geology 23	1
Political Science 1 or History 1	3	Geology 24	2
		Political Science 1 or History 1	3
Electives		*Electives*	
Physics		Physics	
Chemistry		Chemistry	
Biology		Biology	
Mathematics		Mathematics	
Modern Language		Modern Language	

SENIOR YEAR

First Term		Second Term	
Biology 7	3	Biology 7	3
Chemistry 11	3	Chemistry 11	3
History 1 or Political Science 1	3	History 1 or Political Science 1	3
Electives		*Electives*	
Physics		Physics	
Chemistry		Chemistry	
Biology		Biology	
History or Political Science		History or Political Science	
Modern Language		Modern Language	

CHEMISTRY

Students who wish to specialize in Chemistry are advised to take the B.S. course in Chemistry. The subjects have been selected and arranged to prepare students for positions in metallurgical laboratories, as chemists with manufacturers or in analytical laboratories, or as assistant chemists for immediate service in the various departments of the United States government. It may also be followed by those who wish to teach or to do graduate work in Chemistry.

FRESHMAN YEAR

First Term		Second Term	
English 1	3	English 2	
Mathematics 3	3	Mathematics 1 or 2	3
Physics 1	3	Physics 1	3
German	3	German	3
Chemistry 1	3	Chemistry 1	3

SOPHOMORE YEAR

First Term		Second Term	
German	3	German	3
Chemistry 35-2	2	Chemistry 35-3	2
Chemistry 4	3	Chemistry 4	3
Physical Laboratory 24-14	3	Physics 2	3
Electives		*Electives*	
Mathematics		Mathematics	
English		English	

JUNIOR YEAR

FIRST TERM		SECOND TERM	
Chemistry 5	3	Chemistry 5	3
Chemistry 9	1	Chemistry 7	2
Chemistry 35-10	4	Chemistry 35-10	4
Political Science 1	3	Political Science 1	3
Mineralogy 1	3		
Electives		*Electives*	
German		German	
English		English	
Mathematics		Mathematics	
History 1		History 1	
Electrical Laboratory		Electrical Laboratory	
		Crystallography	

SENIOR YEAR

FIRST TERM		SECOND TERM	
Chemistry 11	3	Chemistry 11	3
Chemistry 17	3	Chemistry 17	3
Thesis	3	Thesis	3
Geology 21	1	Geology 23	1
Geology 22	2	Geology 24	2
		Chemistry 8	2
Electives		*Electives*	
Biology		Biology	
Chemistry 12		Chemistry 12	
Political Science		Political Science	
Dynamo-Electric Machinery			

III. SPECIALIZED COURSES LEADING TO THE DEGREE OF BACHELOR OF ARTS OR BACHELOR OF SCIENCE

The following courses have been arranged for students who desire to begin preparation for a definite vocation. They are designed to give at the same time as much of the general training which every educated man should have as is consistent with their special purpose, and are intended to be followed by more definitely specialized training in a graduate school or in practical experience. Those who have presented an advanced ancient language for admission and choose their electives so as to fulfil the requirements of the A.B. degree, will receive that degree. Others satisfactorily completing the subjects indicated in one of these courses will receive the degree of B.S. The studies of the Freshman year are alike for all courses, so that a definite choice need not usually be made before the end of the first year.

FRESHMAN YEAR

[Alike for all the following courses]

FIRST TERM		SECOND TERM	
English 1	3	English 2	3
Mathematics 3	3	Mathematics 1 or 2	3
Natural Science	3	Natural Science	3
Two Foreign Languages, ancient or modern	6	Two Foreign Languages, ancient or modern	6

Note: Students intending to enter the Medical Preparatory Course should take Chemistry 1 as the Natural Science in this year.

Business

The need of systematic training of students contemplating a business career arises from the differentiation, specialization, and increasing complexity of modern business relations. This course is in no sense intended as a substitute for experience; but it should impart organized knowledge, broaden the outlook, and train the student to analyze and to appreciate new situations as they arise.

SOPHOMORE YEAR

First Term		Second Term	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Natural Science	3	Natural Science	3
History 1	3	History 1	3
Political Science 1	3	Political Science 1	3
Elective	3	Elective	3

JUNIOR YEAR

First Term		Second Term	
Political Science 2	3	Political Science 13	3
Political Science 6	3	Political Science 16	3
Philosophy 3	3	Philosophy 4	3
Law 1 or 5	3	Elective	6
Elective	3		

SENIOR YEAR

First Term		Second Term	
Political Science 17	3	Political Science 17	3
Philosophy 55	3	Philosophy 55	3
Law 5 or 1	3	Elective	9
Elective	6		

Diplomatic and Consular Service

For all except the highest posts in the diplomatic and consular service, appointees are now required to prove their fitness by examination. The following course, which emphasizes the study of Language, History, and Public Law, is designed to meet the requirements prescribed by the Department of State.

SOPHOMORE YEAR

First Term		Second Term	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Natural Science	3	Natural Science	3
History 1	3	History 1	3
Political Science 1	3	Political Science 1	3
Elective	3	Elective	3

JUNIOR YEAR

First Term		Second Term	
History 19 (or alternate)	3	History 20 (or alternate)	3
Law 1 (or alternate)	3	Law 2 (or alternate)	3
Philosophy 3 or Political Science 2	3	French 3B or German 3B	3
French 3B or German 3B	3	Elective	6
Elective	3		

SENIOR YEAR

First Term		Second Term	
History 4 or 6	3	History 7 or 8	3
Political Science or Philosophy 3	3	Law 7 (or alternate)	3
Law 5 (or alternate)	3	History 15	3
History 15	3	Elective	6
Elective	3		

FORESTRY PREPARATORY

The Forestry Preparatory Course is intended to fit students to enter the best Forestry schools, and includes the subjects which are necessary to meet the requirements of those institutions. Within the last few years Forestry has become one of the most important professions, and the demand for trained foresters is greater than the supply.

SOPHOMORE YEAR

First Term		Second Term	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Chemistry 1	3	Chemistry 1	3
Physical Laboratory 24-14	3	Physics 2	3
Biology 2 or 3	3	Biology 2 or 3	3
History	3	History	3

JUNIOR YEAR

First Term		Second Term	
Chemistry 35-2	2	Chemistry 35-3	2
Biology 3 or 2	3	Biology 3 or 2	3
Drawing 21-1	5	Surveying 41-1	2
Surveying 41-1	1	Political Science 1	3
Political Science 1	3	Elective	6

SENIOR YEAR

First Term		Second Term	
Geology 21	1	Geology 23	1
Geology 22	2	Geology 24	2
Biology 7	3	Biology 7	3
Elective	9	Hydraulics 41-43	3
		Highways 41-21	3
		Dynamo-Electric Machinery 61-3	2
		Elective	2

JOURNALISM

This course, designed for students who intend to adopt Journalism as a profession, is not intended as a substitute for experience. It aims to give the general education which is essential for work in this profession, placing emphasis on subjects which give an understanding of the life of to-day, and those which develop the power of accurate and fluent expression.

SOPHOMORE YEAR

FIRST TERM		SECOND TERM	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
English 11 or 12	3	English 11 or 12	3
Natural Science	3	Natural Science	3
History 1	3	History 1	3
Political Science 1	3	Political Science 1	3

JUNIOR YEAR

FIRST TERM		SECOND TERM	
History 3	3	History 3	3
English 17, 24, or 34	3	English 18, 36, or 34	3
Philosophy 3	3	Political Science 16	3
History 4 (or alternate)	3	History 5 (or alternate)	3
Elective	3	Elective	3

SENIOR YEAR

FIRST TERM		SECOND TERM	
Philosophy 6	3	Philosophy 7	3
Law (1 or 5)	3	Philosophy 55	3
Political Science 6	3	Elective	9
Philosophy 55	3		
Elective	3		

LAW PREPARATORY

The following course, which is arranged especially for students who are preparing to enter a law school, emphasizes the study of History, English, Economics, and Public Law. Among the more technical courses in Public Law, students may elect subjects which will enable them to test their fitness for the legal profession.

SOPHOMORE YEAR

FIRST TERM		SECOND TERM	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Natural Science	3	Natural Science	3
History 1	3	History 1	3
Philosophy 1	3	Philosophy 2	3
Elective (English or Pol. Science)	3	Elective (English or Pol. Science)	3

JUNIOR YEAR

FIRST TERM		SECOND TERM	
History 2 or 6	3	History 2 or 7	3
Law 1 (or alternate)	3	Philosophy 4	3
Philosophy 3	3	Law 2 (or alternate)	3
Elective	6	Elective	6

SENIOR YEAR

FIRST TERM		SECOND TERM	
History 6 or 2	3	History 7 or 2	3
Law 5 (or alternate)	3	History 15	3
History 15	3	Law 9 (or alternate)	3
Elective	6	Elective	6

MEDICAL PREPARATORY

The Medical Preparatory Course is intended to fit students for any medical school in the United States. The studies included are all of immediate importance in the professional training, and those of the fourth year, taken in the Tufts Medical School, complete the first year of the distinctively medical course. In this way it is possible to obtain the bachelor's and the doctor's degree in seven years.

SOPHOMORE YEAR

First Term		Second Term	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Physics 1	3	Physics 1	3
Chemistry 35-2	2	Chemistry 35-3	2
Biology 2 or 3	3	Biology 2 or 3	3
History	3	History	3

JUNIOR YEAR

First Term		Second Term	
Physical Laboratory 24-14	3	Physics 2	3
Biology 3 or 2	3	Biology 3 or 2	3
Chemistry 35-10	4	Chemistry 35-10	4
Philosophy 55	3	Philosophy 55	3
Elective	3	Elective	3

SENIOR YEAR

Corresponds to the first year of the Medical Course
(In Tufts Medical School, Boston)

Organized Philanthropy

The following course in Organized Philanthropy has been arranged to fit the student for professional and volunteer social work, or to enter the professional schools which have lately been established in this field.

SOPHOMORE YEAR

First Term		Second Term	
German	3	German	3
Chemistry or Biology	3	Chemistry or Biology	3
History 1	3	History 1	3
Political Science 1	3	Political Science 1	3
Philosophy 1	3	Philosophy 2	3

JUNIOR YEAR

First Term		Second Term	
Political Science 2	3	Political Science 17	3
Political Science 6	3	Political Science 16	3
Political Science 17	3	Law 2 or 7	3
Law 1 or 5	3	Elective	6
Elective	3		

SENIOR YEAR

First Term		Second Term	
Law 5 or 1	3	Law 7 or 2	3
Philosophy 6	3	Philosophy 7	3
Political Science 3	3	Political Science 5	3
Elective	6	Political Science 13	3
		Elective	3

Teaching

This course is designed to give a broad training, with a reasonable opportunity for specialization, and to include in particular the subjects now required of teachers in many of the larger cities. Students intending to teach Language are advised to take Latin in the Freshman year, on account of its fundamental value in the study of other languages.

The attention of students intending to teach Science is called to the course in General Science.

SOPHOMORE YEAR

First Term		Second Term	
Philosophy 1	3	Philosophy 2	3
History 1	3	History 1	3
Natural Science	3	Natural Science	3
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Major Work	3	Major Work	3

JUNIOR YEAR

First Term		Second Term	
Philosophy 55	3	Philosophy 55	3
Music 9 or 1	3	Music 10 or 21	3
Major and Elective Work	9	Major and Elective Work	9

SENIOR YEAR

First Term		Second Term	
Education 1	3	Education 2	3
Major and Elective Work	12	Major and Elective Work	12

Departments of Instruction

MAJOR DEPARTMENTS

Any of the following may be chosen as major departments:

ENGLISH
GERMAN
FRENCH
LATIN
GREEK
PHILOSOPHY
HISTORY AND PUBLIC LAW
POLITICAL SCIENCE
MATHEMATICS
PHYSICS
CHEMISTRY
BIOLOGY

In the subjoined statement of the subjects offered in the different departments, the name of the major instructor is that given at the head of each department that offers major work. In other cases the name is given of the instructor in general charge of the department. When two or more names appear, major students will be guided by the usage of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Subjects that continue through only one half-year are indicated by letters in parenthesis: thus (F) means "first half-year," (S) means "second half-year." Subjects not so indicated extend through both terms.

Unless otherwise indicated, classes meet three times weekly and the credit is three term hours for each half-year.

Subjects enclosed in brackets are not offered during the current year. In many cases alternates are indicated, which fill their places in the program for this year. If less than four qualified students apply for an announced course, the instructor is permitted to cancel the announcement unless the course is a part of the required work for any student applying. Subjects marked with an asterisk (*) will not be counted for honors. Subjects marked with a double asterisk (**) will be counted for honors only when special conditions are complied with.

No two subjects assigned to the same hour can be taken simultaneously by any student.

12 ENGLISH

PROFESSOR JONES

The work of the department of English includes composition and the study of literature. Subjects 1, 2, 4, and 23 give practice in one or another form of composition as the result immediately held in view, but written English is required also in many of the classes aiming primarily at literary study. See also subject 7. Subjects 1 and 2 are prescribed for all students. Major students in English are required to take English 11 or 12 in the earlier years of their course. Other subjects offer opportunity for practice in advanced composition, and for the study of eminent authors, of leading critical essays, of the development of English drama and fiction. English 10, 11, or 12 may be counted for honors, provided only one of these subjects is so counted.

SUBJECTS

*1. The Forms of Discourse. Exposition and Argumentation. Lectures, text-books, outside reading, themes, and conferences. (F)

MR. GILMER AND PROFESSOR DAVIES

*2. The Forms of Discourse. Description and Narration. Lectures, text-book, outside reading, themes, and conferences. (S)

MR. GILMER AND PROFESSOR DAVIES

[4. Advanced Composition. Lectures, themes, conferences. (S)

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English 4 is open to those who have obtained at least Grade C in English 1 and English 2.

[7. English Versification. Study of the nature and the forms of poetry Composition. (S) —— ——]

[**10. The English Bible. —— ——]

[**11. General View of English Literature. The study of representative masterpieces. Lectures, text-books, required reading, papers.

MR. GILMER]

**12. American Literature. Lectures, required reading, text-book, essays. MR. GILMER

[16. Milton and his Time. Lectures, readings, brief critical essays.

PROFESSOR JONES]

17. Shakespeare. Minute study of a few plays, lectures, quizzes. (F) Professor Jones

18. Shakespeare. Reading of selected plays, lectures, brief critical essays. (S) Professor Jones

[19. The age of Chaucer. Study of forms and pronunciation, reading of selections from Chaucer and his contemporaries. —— ——]

[20. Old English. Introduction to the language and literature of the Anglo-Saxons, with lectures on the origin and early development of the English tongue. Grammatical and literary study of select prose and poetical texts. —— ——]

[21. The Principles of Criticism. Plato, Aristotle, Longinus, Quintilian, Burke, Lessing, Coleridge, Pater. (S) —— ——]

[23. The Short Story. Examples, and composition. (F) —— ——]

24. Poetry of the Nineteenth Century, except Tennyson and Browning. (F) Professor Jones

25. Development of the Drama. Mr. Gilmer

26. Development of the English Novel, in the eighteenth and nineteenth centuries. Professor Jones

28. Seminar. Professor Jones

English 28 is open only to advanced students of English.

34. Tennyson and Browning. Lectures, reading, brief critical essays. Professor Jones

36. Thomas Carlyle. (S) Professor Jones

18 ORATORY

It is intended that the study of oratory shall benefit the student, whether or not he looks to public speaking as a part of his profession. Oratory 1 aims at securing intelligent, natural, and forcible speech. The principles that underlie good public speaking are pointed out, and applied in individual practice. Oratory 2 is not organically connected with Oratory 1, but offers practice in argumentation and debate to Sophomores, Juniors, and Seniors.

SUBJECTS

1. The Principles of Oratory. Correct breathing and tone production; placing the voice; enunciation and pronunciation; attitude and gesture. Conferences. (S) Mr. Gilmer

[2. Argumentation and Debate. Text-book, papers, impromptu and prepared debate. Individual criticism. (F) MR. GILMER]

For 1912–1913 students desiring this subject may elect 11-13 English in the Engineering School.

22 GERMAN

PROFESSOR FAY

The aim of the department is twofold, according as the student has entered with the elementary or a more advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elementary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; later the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced work the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms.

Six consecutive subjects are offered. While it is not impossible to take them all within the four college years, the scheme is based upon the supposition that the earlier subjects will have been taken in the preparatory school.

SUBJECTS

*1. Elementary German. The essentials of grammar; a German reader; reading of modern prose; dictation and composition.
MR. PUCKETT

German 1 is the equivalent of the entrance requirement in Elementary German.

*2. Intermediate German. Review of grammatical principles, especially with reference to syntax. Reading of works by modern authors, lyrics and ballads. Dictation and composition. ASSISTANT PROFESSOR REED

German 2 is open to entering students who have presented Elementary German for admission. It is possible for a student who has done with distinction the work of German 1, and who shall do a prescribed amount of outside reading, to omit this subject and enter German 3.

**3. First half-year: the rapid reading of modern prose in contemporary authors. Second half-year: introduction to the classic authors: Lessing, Minna von Barnhelm; Schiller, Die Jungfrau von Orleans; Goethe, Hermann und Dorothea. PROFESSOR FAY and ASSISTANT PROFESSOR REED

German 3 is open to entering students who have presented Intermediate German for admission. Either half-year may be counted as a half-subject.

**3B. German Composition, written and oral.
ASSISTANT PROFESSOR REED

German 3B is offered to students who are taking or have previously taken German 3 or its equivalent.

4. Schiller and Goethe. Maria Stuart, Wallenstein, and Ballads of Schiller; Egmont, and selections from prose works of Goethe. Collateral reading. Dictation. ASSISTANT PROFESSOR REED

German 4 is open to entering students who have presented Advanced German for admission. Juniors and Seniors whose major department is German may be permitted to take 4 and 5 in the same year.

5. Advanced reading in Lessing and Goethe. Nathan der Weise, Emilia Galotti, Laokoön; Tasso, Iphigenie, Faust, Parts I and II, with collateral reading. PROFESSOR FAY

6. History of German Literature, with illustrative works for leading epochs. Middle High German: Bachmann, Mittelhochdeutsches Lesebuch.
PROFESSOR FAY

32 FRENCH

PROFESSOR FAY

The plan and scope of the department are, in general, the same as those of the department of German, to the statement of which the student is referred. Six consecutive subjects are offered.

SUBJECTS

*1. Elementary French. The essentials of grammar, with composition, and the reading of short works of modern authors in prose and verse.
PROFESSOR LEWIS

French 1 is the equivalent of the entrance requirement in Elementary French.

*2. Intermediate French. Review of grammatical principles, especially with reference to syntax; exercise in composition; vocabulary practice; reading of modern fiction and drama, such as Mérimée's Colomba and Sandeau's Mademoiselle de la Seiglière. PROFESSOR LEWIS

French 2, is open to entering students who have presented Elementary French for admission.

**3. Reading of modern authors (Taine or de Vigny, and novelists); introduction to seventeenth-century classics (Corneille, Racine, Molière, Boileau). Review of grammatical principles, with advanced vocabulary practice. PROFESSOR LEWIS and PROFESSOR WADE

French 3 is open to entering students who have presented Intermediate French for admission. Either half-year may count as a half-subject.

**3B. French Composition. The earlier part of the course will consist of translation from the English, later on from the German, the work being based on Ploetz' Nouvelle Grammaire Française and the corresponding Uebungen zur französischen Syntax. PROFESSOR FAY

French 3B is ordinarily open only to students who have completed French 3, or its equivalent, and at least one course in German.

4. Literature and Manners of the Seventeenth Century. Crane's Société française au XVIIe Siècle; Molière, Le Misanthrope, Les Précieuses Ridicules, Les Femmes Savantes; Boileau, Les Héros de Roman; Madame de Sévigné; La Fontaine, Fables (selected); Warren's French Prose of the XVIIth Century; collateral reading touching the political history of the period, and selections from modern critics. PROFESSOR FAY

French 4 is open to entering students who have presented Advanced French for admission. Juniors and Seniors whose major department is French may be permitted to take 4 and 5 in the same year.

5. A brief glance at French literature previous to the Renaissance, and a more detailed study of the sixteenth, eighteenth, and the first half of the nineteenth centuries. PROFESSOR WADE

6. Historical Grammar. Old French readings: Chanson de Roland; Villehardouin, Joinville. (F) Wright's History of French Literature. Detailed study of some period, with illustrative texts. (S) PROFESSOR FAY

42 ITALIAN

PROFESSOR FAY

The work offered in Italian is open to those only who have had two years of college study in French, or its equivalent. With such previous training, the student should be able to acquire with rapidity a reading knowledge of the language, and thus to become acquainted within the year with characteristics of contemporary and classic literature. This subject is presented in alternate years.

SUBJECT

1. Grandgent's Grammar and Composition; Bowen's Reader; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition).

PROFESSOR FAY

52 LATIN

PROFESSOR DENISON

The aim of the department of Latin is to lead students to a thorough appreciation of a language and people that have had profound influence on modern life and literature. A wide range of reading is offered, to give opportunity for acquaintance with every important division of Latin literature. Considerable time is devoted to reading at sight. The attention of students is directed constantly to the history, archæology, art, public and private life, and religion of the Roman people, as well as to the formation and structure of their language and its relation to other languages. Due emphasis is laid on the connection between ancient and modern life and thought. The various reading courses are supplemented with lectures on appropriate topics, and are illustrated from time to time with the stereopticon. Courses 3, 4, 6, as well as all subjects in Classical Archæology, are suitable for graduate students. The authors and works named below may be changed, but are fairly indicative of the character of the work in the several subjects.

SUBJECTS

*1. Cicero, De Senectute, or selected letters; Vergil, Eclogues; Horace, Odes, Books i–iii; Livy, selections; reading at sight; lectures on suitable topics. PROFESSOR DENISON

Latin 1 is introductory to all later subjects.

2. Pliny, selected letters; Horace, Odes, Book iv; Terence, Phormio; Apuleius, Story of Cupid and Psyche; Petronius, Cena Trimalchionis. This subject introduces the student to the early drama and also to the authors of the Silver Age. PROFESSOR DENISON

Latin 2 is open to students who have completed Latin 1.

3. Juvenal, principal Satires; Martial, selected Epigrams; Cicero, Dream of Scipio; Tacitus, Annals; Catullus; reading at sight.
PROFESSOR DENISON

[4. Horace, Satires and Epistles; Plautus, one or two plays; Cicero, selected letters; Tibullus and Propertius; reading at sight.
PROFESSOR DENISON]

Subjects 3 and 4 will be given in alternate years, and are designed for those who have completed Latin 2, or its equivalent. They may, by special arrangement with the instructor, be taken as half-subjects in either half-year.

*5. Latin Composition. This course may accompany Latin 1 or be taken later in connection with other subjects offered by the department. *One hour a week.* PROFESSOR DENISON

6. Latin Composition. Latin 6 is open only to students who have completed Latin 5. In it particular attention is paid to idiom and style. By reason of the variation of the work from year to year, the subject may be taken a second time with due credit. *One hour a week.* PROFESSOR DENISON

NOTE: — The attention of Greek and Latin students is called to related subjects listed under Classical History and Archæology.

62 GREEK

PROFESSOR WADE

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the practice of reading at sight is encouraged, and especial effort is made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspiration of a noble literature.

To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

SUBJECTS

[*1. Elementary. Goodwin's Grammar; Xenophon, Anabasis; Homer
PROFESSOR WADE]

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college. This subject may be taken (without credit) as a normal course by advanced students, on consultation with the instructor. Greek 1 will be given in 1913–1914 if five students apply for it.

**2. Xenophon, Memorabilia; Homer, Odyssey; Euripides, one play.
PROFESSOR WADE

Greek 2 is for students who have passed Greek 1, or the entrance requirements in Greek.

3. Herodotus, Books VII and VIII; Æschylus, The Persians; Sophocles, Antigone; Euripides, Alcestis. PROFESSOR WADE

4. Lyric and Elegiac Poets, to Pindar. Aristophanes: Clouds, Birds, Acharnians, Frogs, with study of social life in Athens in the fifth century B. C. PROFESSOR WADE

[5. Theocritus, Idyls, with study of the Alexandrine age; Lucian; Homer, the Iliad, or the Odyssey, entire, with lectures on the results of the more recent investigations of the Homeric question. PROFESSOR WADE]

Subjects 4 and 5 will be given in alternate years, and are designed for those who have completed Greek 3 or its equivalent. They may, by arrangement with the instructor, be taken as half-subjects in either half-year.

NOTE:—The authors and works enumerated under courses 2, 3 and 4 are not necessarily repeated each year, but are intended to give a general idea of the aim and scope of the courses.

**6. Greek Composition; practice in sight reading. *One hour a week.*
PROFESSOR WADE

Greek 6 may be taken by anyone who has had the equivalent of Greek 1.

7. Greek Composition; reading at sight. *One hour a week.*
PROFESSOR WADE

Greek 7 is open only to students who have completed Greek 6.

NOTE:—No student can be recommended as a teacher of Greek who has not taken at least one subject in Greek composition.

28 CLASSICAL HISTORY AND ARCHÆOLOGY

Under Classical History and Archæology are grouped subjects of the Greek and Latin departments which deal, to a large measure in lecture form, with the art, history, life (both public and private), and religion of the Ancient Greeks and Romans. The work will consist of lectures, collateral reading and investigation, and papers. There will be illustration, wherever possible, with photographs, stereopticon, and specimens. The following subjects are intended to supplement the reading of classical authors, which naturally forms the basis of serious study in Classical History and Archæology.

SUBJECTS

[1. Greek, Roman, and Etruscan Architecture. (F)
PROFESSOR DENISON

[2. Greek and Roman Sculpture. (S) PROFESSOR WADE]

Classical Archæology 1 and 2 will be given in 1913–14.

[3. Roman Private Life. (F) PROFESSOR DENISON]

Classical Archæology 3 will be given in 1914–1915.

4. Greek Public and Private Life. (S) PROFESSOR WADE

In subjects 3 and 4 there will be systematic treatment of such topics as the customs pertaining to birth, education, marriage, death, the house, furniture, dress, meals, amusements.

5. Roman Religion and Public Life. (F) PROFESSOR DENISON

In subject 5 special stress will be laid on the Roman Religion, but there will be systematic study of other topics such as the topography of Rome, political, legal and military institutions, measures and money, books, inscriptions, chronology and calendar.

[6. Greek Mythology and Religion. The underlying principles of Greek religion will be considered. The Myths will be treated in their relation to ancient and modern literature and art. Lectures and text book (Fairbanks, Greek Mythology). (S) PROFESSOR WADE]

7. Greek History. From the earliest times to the rise of Macedon, with consideration of the sources. Textbook (Bury) and lectures. (F)
PROFESSOR WADE

8. History of Rome. From the beginnings of the City to the Fall of the Western Empire. Lectures, text book, recitations, study of the sources. (S) PROFESSOR DENISON

16 PHILOSOPHY*

PROFESSOR SCHMIDT AND PROFESSOR TOUSEY

Courses in the history of philosophy are unprofitable for beginners who have neither read the authors discussed in the text-books and lectures, nor formed any clear idea of the kind of problems with which philosophy deals; the department therefore does not offer for next year the two elementary courses in the History of Ancient and Modern Philosophy. In their stead will be given an "Introduction to Philosophy," designed primarily to meet the needs of the general student who has not time for special work in philosophy and who yet needs a perspective of what philosophy is about and what kind of help it may give him. Incidentally the course will introduce the student to the classics in philosophy. Some of these works, chosen according to individual needs and predilections, will be studied under the guidance of the instructor. The "Introduction to Philosophy" need not precede the special courses in ethics, logic, psychology; but the student is advised to begin, whenever possible, with the introductory course.

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*The three departments of Philosophy, History and Public Law, and Political Science constitute the group of Mental and Moral Science, in at least two of which twelve term-hours of work are required for the degree of A.B.

INTRODUCTORY SUBJECTS

1. Introduction to Philosophy. Lectures, conferences and assigned reading. (F) PROFESSOR SCHMIDT

2. Introduction to Philosophy. Lectures, conferences and assigned reading. Open only to those who have passed Philosophy 1. (S)
PROFESSOR SCHMIDT

3. Logic. An elementary exposition of "classical" logic; concept, judgment, inference; an elementary study of fallacies. (F)
PROFESSOR SCHMIDT

4. Logic. The "new" logic. An introduction to the calculus of classes and propositions; with applications. This course presupposes Philosophy 3. (S) PROFESSOR SCHMIDT

55. Psychology. An elementary lecture course. Normal human psychology will form the main subject of the course; but abnormal and supernormal phenomena will be studied in so far as they shed light on normal psychology. Lectures, illustrative experiments, conferences.
PROFESSOR SCHMIDT

[17. Logic. Studies in argumentative literature, with the aim to bring logical theory into relation with the practical requirements of research, advocacy, and criticism; and to illustrate the principles governing the effective presentation of arguments. Use will be made of selected examples of reasoned discourse, supplemented by discussions, and constructive work by the student. (S) PROFESSOR TOUSEY]

Philosophy 17 is open only to those who have received credit in Philosophy 3.

6. Ethics, Theory of. The moral nature; springs of conduct; moral judgments; theories of the moral standard, particularly sentimentalism, hedonism, rigorism, eudæmonism; moral volition, with critical examination of the doctrines of free will and determinism; the moral ideal. Text-books, lectures, assigned reading, themes. (F) PROFESSOR TOUSEY

7. Ethics, Applied. Bearing of moral theory on the problems of (*a*) the individual life, (*b*) the social life. Special consideration of duties, rights, temperance, charities, moral pathology, penology, ethics of belief. Text-books, lectures, prescribed reading, and theses. (S) PROFESSOR TOUSEY

8. Ethics, Historical and Critical. History of ethical speculation; development of moral customs and ideals. Text-books, lectures, prescribed studies in the classics of ethical literature, and theses. (F)
PROFESSOR TOUSEY

15. The Philosophy of Theism. The final problem; limits of the intelligence; final cause in nature; evidences of a moral order; theistic and anti-theistic argumentation; intuitivism. PROFESSOR TOUSEY

[16. Experimental Psychology. An elementary laboratory course; open only to those who either have finished or are taking the course in systematic psychology (55). Nine hours of laboratory work counting for three term hours. (S) PROFESSOR SCHMIDT]

26 EDUCATION

The courses in Education are of value for those pursuing general culture as well as for those intending to become teachers. They are arranged to meet the growing requirements of the best city school boards. Through the courtesy of the Somerville School Department opportunity is offered for observation and practice teaching. Attention is called to the course of study outlined for teachers, as given under "Courses of Instruction."

SUBJECTS

1. Principles of Education. Brief introductory study of the Educational Reformers. Ruediger's Principles of Education studied critically, supplemented by lectures, discussion and reports. (F)
ASSISTANT PROFESSOR BRISTOL

2. Child Study. Child psychology; The relation of the school to child welfare including a discussion of such problems as school hygiene, backward children, juvenile delinquents and public play grounds; Principles of moral and religious education. (S) ASSISTANT PROFESSOR BRISTOL

(Education 2 will not be given in 1913–1914.)

36 HISTORY AND 46 PUBLIC LAW*

PROFESSOR ANDREWS AND PROFESSOR BOLLES

The department aims to develop the idea of unity in the history of mankind, and to make the study of all history of practical value through its relation to present-day problems and conditions. To this end the approach is made through subjects intended to give a thorough scientific knowledge of essential facts, and so arranged as to show these facts in their proper relations. History 1 is the introductory subject by which the student is prepared for more detailed work. History 2 is devoted to the history of England, History 3 to the history of the United States. The subjects numbered from 4 to 20 offer to properly qualified students opportunity to make a more detailed study of limited periods. These subjects are arranged in series, which alternate with each other from year to year, and thus cover a considerable range. History 15 is devoted to research.

Students expecting to make History their principal study are urged to devote considerable time in their first and second years to the study of modern languages. In History 4, 6, 7, 8, 19, and 20 a reading knowledge of French is assumed.

In the division of Public Law and Administration the object is to furnish such general knowledge of political institutions and their working as is needed by every intelligent citizen, and also to assist those who expect to enter the legal profession or the government service. The study of law and government is closely related to the study of history, and hence one year of history is advisable in preparation for the work in Public Law. The work in this group begins with a study of the political institutions of the United States, subjects dealing with the institutions of our own and of other countries, followed by subjects treating international relations. A knowledge of French is desirable, and in some cases indispensable.

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* See note to introduction of the Department of Philosophy.

36 History

SUBJECTS

1. The General History of Europe to the French Revolution. History 1 is an outline course, designed to give a comprehensive view of the various political, religious, industrial, and social factors in the history of Europe, and thus to pave the way for a more detailed study of limited periods. Text-books, lectures and assigned reading. PROFESSOR ANDREWS

History 1 and 2 will not be accepted for an advanced degree. Students desiring to take as many subjects as possible in the department should elect History 1 and 2 in their second year.

2. General History of England. Text-book, lectures, analyses, and themes. PROFESSOR BOLLES

3. General History of America. Text-book, lectures, analyses, and themes. PROFESSOR BOLLES

[4. The History of Europe during the period of the Renaissance and Reformation; the study of the Italian cities and the rise of Italian humanism; the religious, intellectual, economic, and political conditions which gave rise to the Protestant movement in the various countries. Emphasis will be placed upon the beginnings of modern diplomacy, and of international relations. Text-books, lectures, assigned reading, and thesis. (F) PROFESSOR ANDREWS]

[8. The History of Europe during the period of the Catholic Reformation, the study of the Inquisition, the Jesuits, and the Council of Trent; the history of Spain to the peace of the Pyrenees; the affairs of Central and Eastern Europe; the development of France through the rule of Richelieu and Mazarin, and the causes, events, and results of the Thirty Years War. Text-book, lectures, assigned reading and thesis. PROFESSOR ANDREWS]

History 4 and 8 may be offered in 1914–1915.

6. The French Revolution, the Napoleonic Period and the history of Europe to 1850. Text-book, assigned reading and thesis. (F) PROFESSOR ANDREWS

7. Modern Europe, 1850–1913. One of the chief purposes of History 7 is to furnish some explanation of present-day questions in European politics. Assigned reading and thesis. (S) PROFESSOR ANDREWS

19. The History of the Nearer Eastern question from the earliest times to the beginning of the decline of the Ottoman Empire. This subject includes the history and institutions of the countries and peoples in the Nearer East, including especially the Byzantine Empire, the Balkan Peninsula, Greece, Asia Minor, Egypt, and Northern Africa. Lectures, assigned reading, and thesis. (F) PROFESSOR ANDREWS

[20. The History of the Nearer Eastern question from the beginning of the decline of the Ottoman Empire to the present day. Special emphasis will be placed upon the diplomatic side and the attitude of the European Powers. Lectures, assigned reading, and thesis. (S)
PROFESSOR ANDREWS]

History 20 will be given in 1913–1914.

15. Seminary in History and Public Law. Investigation of selected topics from the sources. During the year 1912–13 the subject of study will be taken from the recent history of Europe. History 15 is open only to such students as receive the special permission of the instructor. *Hours and credit to be arranged with the instructor.* PROFESSOR ANDREWS

46 Public Law and Administration

SUBJECTS

☞History 1 must precede or accompany any subject in Public Law (except Public Law 21). Students desiring to take all the subjects in this group should elect History 1 in their second year, as well as Public Law 1 and 2, or their alternates, in their third year.

21. American and English Government. A general description of the structures and functions of present day government with especial reference to the United States and Great Britain, particularly the composition and powers of legislative bodies, the relations between the executive and legislature, the powers of the courts, the organization and influence of political parties, etc. (S)

This subject cannot be counted toward satisfying the prescribed work in Mental and Moral Science or as part of the major requirement in History and Public Law.

[1. Political Institutions of the United States — Federal, State, and Municipal. A study is made of government from the standpoint both of constitutional arrangements and of its actual working as modified by usage and existing conditions. Political parties and their organization, together with the attempts made to regulate them by law, will be studied. Textbook, lectures, assigned reabing and thesis. (F) PROFESSOR ANDREWS]

[8. Colonial Governments: The governments of colonies and dependencies throughout the world. Attention will be given to the history of modern colonization, to past and present experiments in administration, and to the international aspects of the colonial development of modern nations. Lectures, assigned reading and thesis. (S)
PROFESSOR ANDREWS]

Public Law 1 and 8 may be expected in 1913–14.

[3. Modern English Government. Detailed study of the actual working of the English Government. Attention will be given to the procedure

of Parliament and its relation to the executive, to the administrative structure, the organization and influence of political parties, and colonial relations. Comparisons with American and Continental political conditions will be attempted. Text-book, lectures, assigned reading, and thesis. (F)
PROFESSOR ANDREWS]

[4. European Government and Politics. A study of the constitutions of the chief European states, together with the consideration of the most important questions of European politics. A reading knowledge of French is desirable. Text-book, lectures, assigned reading, and thesis. (S)
PROFESSOR ANDREWS]

Public Law 3 and 4 may be expected in 1914–1915.

5. International Law. The history of international law and a consideration of its leading principles. Text-book, lectures, assigned reading, and thesis. (F) PROFESSOR ANDREWS

9. The History of Modern Diplomacy, from the Thirty Years War to the present day, including the study of the principal alliances, congresses and diplomatic controversies between European nations. Lectures, assigned reading, and thesis. (S) PROFESSOR ANDREWS

66 POLITICAL SCIENCE*

PROFESSOR METCALF

In its course of instruction, the chief aim of the department of Political Science is to give a general view of the most important branches of economics, beginning with the elements of the science and passing by degrees to work of the investigative order. In addition to this broad general outline of economics, the courses and the methods of study are arranged with reference to the constantly increasing needs of those who are fitting themselves for various practical careers, such as banking, transportation, or mercantile work; and to those who look forward to social and philanthropic work as a profession. Subjects 3, 13, 6, 16 and 17, are especially designed as training for those who are planning for a business career, or for social and philanthropic work as a profession.

Subject 1 is designed to lay the foundation for the more advanced work, but endeavors at the same time to satisfy the wants of those who seek simply a general knowledge of economics. It is open to Freshmen. The character of the work in the advanced subjects is outlined in connection with the following statement. The attention of students is called to allied subjects in the department of Applied Christianity.

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* See note to introduction of the Department of Philosophy.

SUBJECTS

*1. Elements of Economics. (a) Exposition of the fundamental principles of the production, distribution, exchange, and consumption of wealth. (b) The present organization and management of industry, trades unions, coöperation, profit-sharing, immigration, child labor, woman in industry, factory legislation, workingmen's insurance, socialism. Taussig's Principles of Economics will be used as a guide. Economics 1 does not count for honors. PROFESSOR METCALF

Economics 1, or its equivalent, is introductory to all the other subjects offered by the department.

2. Modern Industrial History of Europe. After a brief survey of the economic conditions in the European countries at the close of the Middle Ages, the chief attention will be given to the Industrial Revolution in England, and to the rise of modern industrial Germany. Lectures and recitations. (F) MR. LIMING

22. Economic and Industrial History of the United States. Bogart's Economic History of the United States is used as a guide. (S) MR. LIMING

3. Sociology. This course will be theoretical, dealing with the nature and scope of Sociology, its relation to other studies, especially to Philosophy, Ethics and Economics, with consideration of various theories of social progress. Lectures, discussions and assigned reading, principally from Carver's "Sociology and Social Progress." (F) ASSISTANT PROFESSOR BRISTOL

13. Practical Sociology. Concrete problems in the light of the laws of social science and principles of social progress. The family, history and modern methods of poor relief, criminology, penology, housing and city planning; public control, ownership, and operation of public service utilities; education for social efficiency; principles adapted to the work of social organizers; social and philanthropic work as a profession for men and women. (S) ASSISTANT PROFESSOR BRISTOL

[4. Principles of Public Finance. Public expenditures; classification of public revenues; recent reforms in taxation; the development and significance of public debts; financial administration; recent European and American works on finance. The Science of Finance, by Adams, is used as a guide. Lectures and discussions. (S) —— ——]

[5. Fiscal History of the United States: an historical course, with special reference to the financial experience of the United States. Leading topics are Hamilton's financial system; protection and revenue tariffs; the bank question; the fiscal policy of the Civil War; resumption of specie payments; the national banking system; state and local taxation; silver legislation and the panic of 1893; government loans; present currency problems. Dewey's Financial History of the United States is used as a guide. (s) —— ——]

6. Modern Industrial Combinations. The economics of corporations, with special reference to the so-called trust problem. Among the topics treated are trust promotion, capitalization, trusts and industrial efficiency, influence of combinations upon prices, profits, wages, rights of investors, international trade, industrial stability, and business honor; the practical results attained through publicity, taxation, recent court decisions, and State regulation. Lectures, recitations, and reports. Van Hise, Concentration and Control, is used as a text. (F) PROFESSOR METCALF

16. Modern Labor Problems. This subject deals mainly with the social and economic problems arising from the relations of employers and their laborers. The chief topics will be the growth, methods, and aims of modern associations of wage earners; methods of conciliation and arbitration; strike and factory legislation; employers' liability and recent compensation acts; compulsory publicity; provident institutions and friendly societies; the relation between trade unions and scientific management. Each member of the class will be expected to make a report upon a labor union. Lectures and recitations. (s) PROFESSOR METCALF

17. Modern Industrial Organization and Management. Brief survey of the evolution of modern capitalism; plant equipment; the concentration and integration of modern business; defects of the present industrial order; types of business administration and management; the causes and effects of industrial overstrain; the principles, goal, applications, results, and dangers of vocational guidance; what employer, employee, consumer, and trade unions gain through the economies of scientific management. Lectures, discussions, and thesis. PROFESSOR METCALF

7. The History of Economics: an account of the beginnings, the progress, and the various schools of economic science; study of the writings of Adam Smith, Ricardo, Mill, and others. Political Science 7 is open to advanced students who are specializing in the department. A reading knowledge of French and German is desirable. (s) PROFESSOR METCALF

9. Seminar in Economics and Sociology, designed for advanced students who are specializing in the department. Questions in economics, statistics, or sociology may be selected. *Hours and credit to be arranged.*
PROFESSOR METCALF AND ASSISTANT PROFESSOR BRISTOL

14 MATHEMATICS

PROFESSOR WREN AND PROFESSOR RANSOM

The aim of the instruction in mathematics is to cultivate power of exact thinking, as well as skill in symbolic methods of drawing necessary conclusions. The class-room work is a combination of lectures with questioning of the students to ascertain that the points presented have been duly comprehended.

Mathematics 3, with 1 or 2, constitutes the required work in mathematics. The two required subjects should be taken in the Freshman year. Students who intend to pursue advanced work in the department should take 1 in preference to 2, and should take 4, 5, and 6 in the Sophomore and Junior years. They may then elect any of the remaining subjects.

SUBJECTS

3. Trigonometry. The trigonometric functions, trigonometric analysis, solutions of plane triangles and of right spherical triangles. (F)

PROFESSOR WREN, PROFESSOR SCHMIDT, AND MR. DILLINGHAM

1. Algebra. Binomial theorem, logarithms, permutations and combinations, probability, determinants, theory of equations, etc., preceded by a brief review of Elementary Algebra. (S)

PROFESSOR WREN AND MR. DILLINGHAM

2. Solid Geometry. Solid and spherical geometry including original demonstrations and the solution of numerical problems. (S)

PROFESSOR SCHMIDT AND MR. DILLINGHAM

4. Analytic Geometry. The straight line, circle, parabola, ellipse, hyperbola, higher plane curves, with an introduction to analytic geometry of three dimensions. (F) PROFESSOR WREN

5. Elements of Calculus. Differentiation and integration of the elementary forms of algebraic and transcendental functions with simple applications. (S) PROFESSOR WREN

6. Differential and Integral Calculus. A continuation of course 5, involving application to mechanics and to the theory of plane curves, the determination of lengths, areas and volumes. (F) PROFESSOR WREN

7. Differential and Integral Calculus (advanced). Numerous applications of the Calculus and the more difficult methods of integration. (S)

PROFESSOR WREN

8. Modern Geometry. An advanced course in Plane Analytic Goemetry involving analysis by means of homogeneous coördinates and introducing the elementary geometric transformations. (S) MR. DILLINGHAM

9. Theory of Equations and Determinants. Transformation of equations; cubic and quartic equations; applications of substitution groups; classification of linear simultaneous equations; properties of determinants. (F)
PROFESSOR RANSOM

10. Differential Equations. An elementary course including the solution of ordinary and certain partial differential equations with geometrical and mechanical applications. (S) PROFESSOR WREN

12. Vector Analysis. Sums and products; differential operators; applications to geometry, electricity, and dynamics. (F) PROFESSOR RANSOM

Mathematics 12 is open to students who have completed Mathematics 1, 2, 3, 4, 5, and 6.

[14. Theoretical Mechanics. Types of motion; methods of Lagrange, and Hamilton; study of the Gyroscope. (F) or (S) PROFESSOR RANSOM]

24 PHYSICS

ASSISTANT PROFESSOR MARVIN

The courses of instruction in Physics are designed to meet the needs of three classes of students: first, those who desire the work for its informational and educational value; second, those intending to pursue the study of medicine, chemistry, or other related science; third, those intending to continue the study of Physics in a graduate school.

The aim of the Department is to make the student familiar with the principles of Physics, and to develop in him some facility and power in the application and use of these principles.

SUBJECTS

1. General Physics. A course of lectures and recitations intended to acquaint the student with the fundamental principles of Physics. It is to be elected by students who choose Physics as their prescribed science. Must be preceded or accompanied by Mathematics 3.
ASSISTANT PROFESSOR MARVIN, MR. POTE, and MR. KNIGHT

*31-7. Physical Laboratory. A laboratory course in General Physics, intended to accompany or to follow physics 1. *One three-hour period, with one and one-half hours preparation per week throughout the year. Three term hours.*
ASSISTANT PROFESSOR MARVIN, MR. POTE, and MR. KNIGHT

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* Temporary arrangement for 1912–13.

*24-14. Physical Laboratory. A laboratory course in General Physics, intended to meet the needs of students in Chemistry. (F) *Two three-hour periods and three hours preparation per week. Three term hours.*
MR. POTE and MR. KNIGHT

2. Electricity and Magnetism. Elementary Mathematical Theory. Lectures and recitations. (S) ASSISTANT PROFESSOR MARVIN

6. Wave Motion and Light. Lectures, recitations, and laboratory work in photometry, spectrometry, and interference phenomena. (F) Mathematics 5 is prerequisite ASSISTANT PROFESSOR MARVIN

9. Theory of Heat — Thermodynamics. Lectures, recitations, and laboratory work in thermometry, calorimetry, conductivity, determination of temperature coefficients, and vapor density and pressure. (F) Mathematics 5 is prerequisite. ASSISTANT PROFESSOR MARVIN

10. Lecture table experiments. Lectures, recitations, laboratory, and practice in teaching; intended for those who expect to teach. (S) Prerequisites, Physics 1, and *31-7 or *24-14. ASSISTANT PROFESSOR MARVIN

11. Conduction of Electricity Through Gases, and Radioactivity. A presentation of facts relating to these subjects, and their application to the modern theory of the constitution of matter. (S) Prerequisites, Physics 1 and 2. *Three term hours.* MR. POTE

34 CHEMISTRY

PROFESSOR DURKEE AND ASSISTANT PROFESSOR COBB

The instruction is by means of lectures, recitations, and laboratory work. The lectures, illustrated with numerous experiments, are intended to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including a brief account of the chemistry of the carbon compounds and the principal technical processes. In the laboratory the student has an opportunity to verify some of the chemical theories, and to become familiar with substances and their chemical behavior. The lectures are supplemented by written exercises and recitations in the laboratory. An opportunity to study physical chemistry is afforded by subject 11, a course of lectures with laboratory practice, in which simple physical and chemical measurements are made.

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*Temporary arrangement for 1912–13.

The instruction in qualitative analysis is given through a year, in two subjects (2 and 3), taught in part by lectures and recitations, but mainly by work in the laboratory. During the advanced course the student is required to analyze correctly alloys, mixtures of salts, minerals, slags, and other metallurgical products. Quantitative analysis is taught for the most part in the laboratory, and is designed to give the student the theoretical knowledge and skill in manipulation which are necessary for success in this kind of work. In subject 4 the student is required to analyze the simpler salts, alloys, and minerals. In subject 5, more complicated minerals, alloys, ores, and commercial and food products are analyzed. Organic analysis is included. Technical gas analysis (subject 9) is taught by lectures and laboratory work. The Orsat, Hempel, and Elliott systems are used. Assaying (subject 7) is adapted to familiarizing the student with the practical methods and theory of sampling and assaying gold and silver ores. The above subjects cover a comprehensive study of analytic chemistry, and are intended to give the student such thorough theoretical and practical knowledge as to prepare him for analytical work of almost any description. Metallurgy (subject 8) is intended to give the student some of the more important methods of production of iron and steel from ores. It should be taken after or in connection with Fire Assay (subject 7). The metallurgy of gold and silver is an alternative.

The work in organic chemistry consists of a course of lectures, together with recitations and laboratory work, which are designed to cover the general principles and methods, and include a description of the most important organic compounds. The laboratory practice in organic chemistry will be carried on in connection with subject 10, and will include the preparation of many typical compounds.

In Chemistry 12, opportunity will be given advanced students, under the direction of instructors, for the consideration and discussion of chemical subjects and recent investigations.

SUBJECTS

1. General Chemistry. An introductory course in theoretical and descriptive inorganic chemistry, with a thorough consideration of the simplest carbon compounds and principal technical processes. Lectures, recitations, and laboratory work. *Two lectures, and one three-hour laboratory period. Counting as six term hours.*

PROFESSOR DURKEE, ASSISTANT PROFESSOR COBB,
MR. BAKER AND ASSISTANTS

35-2. Qualitative Analysis for the detection of the metals, a course which includes the experimental development of schemes for the division of the metals into groups, the separation and detection of the metals in each group, — a study of all the chemical changes and analytical details, together with the correct analysis of six known solutions and thirteen unknown. Lectures, laboratory work and recitations. *Two three-hour periods.* (F) *Counting as two term hours.*

PROFESSOR DURKEE, MR. BAKER, AND ASSISTANTS

35-3. Qualitative Analysis, Advanced, dealing with methods to effect solution of solids, the detection of mineral and common organic acids, the complete analysis of inorganic solids, including mixtures of salts, minerals, alloys, and slags. Three known and thirteen unknown are required, and thorough study of the chemical changes and conditions involved in the analyses. Lectures, laboratory work, and recitations. *Two three-hour periods.* (S) *Counting as two term hours.* MR. BAKER

4. Quantitative Analysis. Theory and practice of gravimetric and volumetric analysis, including the determination of chlorine by the ordinary and Gooch crucible methods, iron and sulphur in furous ammonium sulphate, silica in a silicate, phosphorus in a phosphate, complete analysis of dolomite, and brass, preparation of strictly half-normal sodium hydroxide and hydrochloric acid solutions, the volumetric analyses of soda ash and oxalic acid, the analysis of iron ore by the dichromate and permanganate methods, determination of chromium in chromite, of antimony by the iodine method, and silver by the sulphocyanate method. Lectures and laboratory work. *Three three-hour periods. Counting as six term hours.*

PROFESSOR DURKEE

5. Quantitative Analysis Technical. Work varied somewhat to meet the needs of individual students. Course ordinarily comprises proximate analysis of coal, nitrogen in coal, by Kjeldahl's method, complete analysis of boiler scale, mineral and sanitary analysis of water, determination of copper in ores by iodine and cyanide methods, of zinc by ferro-cyanide method, complete analysis of Babbitt metal, determination of lead in ores, and manganese, sulphur, phosphorus, silicon and carbon in iron and steel. Organic analysis. Laboratory work. *Three three-hour periods. Counting as six term hours.* PROFESSOR DURKEE

7. Fire Assay. A course which deals with the theory and practice of sampling and assaying gold and silver ores. Open to students who have taken 1, 2, 3, and 4. *Two three-hour periods.* (S) *Counting as two term hours.* PROFESSOR DURKEE

8. Metallurgy of Iron and Steel, considered largely from the chemical side, and includes the study of ores, fluxes, fuels, furnaces, and the other mechanical devices used in the commercial production of pig iron, wrought iron, and steel, together with the solution theory of iron and steel, heat treatment of steel, and production of malleable cast iron. Metallurgy of Gold and Silver is an alternative. Lectures, recitations, and laboratory work. Chemistry 8 is open to students who have taken Chemistry 1. *Two lectures a week, to be arranged.* (S) *Counting as two term hours.*

PROFESSOR DURKEE

9. Gas Analysis, by the Orsat, Elliot, and Hempel systems. Lectures and laboratory work. Chemistry 9 is open to students who have taken Chemistry 1, 2, 3, and 4. *One three-hour period.* (F) *Counting as one term hour.* PROFESSOR DURKEE

35-10. Organic Chemistry. This course consists of lectures, recitations, and laboratory work. It is intended to familiarize the student with the typical compounds of carbon and their more important derivatives. The work in the laboratory includes the preparation of certain of the more important substances referred to in the lectures, and the identification of certain classes of compounds. Lectures, recitations, and laboratory work. Chemistry 10 is open to students who have taken Chemistry 1. *Three lectures and one three-hour laboratory period. Counting as eight term hours.*

ASSISTANT PROFESSOR COBB

11. Physical Chemistry. The subject matter of this course consists largely of the principles usually included under the head of Physical Chemistry. The work in the laboratory consists of physical chemical measurements and experiments of a physical chemical nature. Lectures, recitations, and laboratory work. Chemistry 11 is open to students who have taken Chemistry 1, 2, and 4. *Two lectures and one three-hour laboratory period. Counting as six term hours.* ASSISTANT PROFESSOR COBB

12. Discussion of Chemical Subjects and Recent Investigations. *One hour a week.* (F)

PROFESSOR DURKEE AND ASSISTANT PROFESSOR COBB

17. Applied Chemistry. A course dealing with the most important applications of inorganic and organic chemistry to manufacturing purposes, such as the production of sulphuric acid, soda, illuminating gas, and sugar. Lectures, visits to plants, text-book work, and recitations. *Two lectures or recitations and one three-hour laboratory period. Counting as six term hours.*

PROFESSOR DURKEE

16. Thesis. Investigation of a problem in Inorganic, Organic, or Technical Chemistry. Open to students of A.B. and Science Courses who have satisfactorily completed Chemistry 1, 2, 3, 4, 5, and 10. *Nine laboratory hours a week, to be arranged. Counting as six term hours.*
PROFESSOR DURKEE AND ASSISTANT PROFESSOR COBB

19. Chemistry. This course is primarily intended to enable the students to acquire facility in reading chemical German. The work consists of recitations and special reports on assigned subjects. These assignments are chiefly to articles in the German chemical journals. Open to Juniors and Seniors, candidates for A. B. or B. S., taking chemistry as a major subject, who have had not less than two years of college German or its equivalent. *To be arranged.* (F) ASSISTANT PROFESSOR COBB

44 BIOLOGY

PROFESSOR KINGSLEY AND ASSISTANT PROFESSOR LAMBERT

Instruction in biology is given both by lectures and by laboratory work, the object being to impart the scientific method of work and thought rather than to cram the student with a large number of unimportant facts. In the laboratory, sixty-four hours of work for each half-year is the minimum, but mere time service is not sufficient: a certain series of forms must be studied, to the satisfaction of the instructors.

Biology 1, 2, and 3 are given in alternate years to Tufts and Jackson students, 1 and 3 being open in 1912–13 to Tufts, 2 in the same year to Jackson.

Biology 1 is intended for those who wish to take but a single year of work in this department. Major students, and candidates for the degree of Bachelor of Science in the General Science or the Medical Preparatory Course, will take Biology 2 and 3 in its place.

By special arrangement with the instructor, additional work may be done in connection with Biology 2 and 3, and corresponding credit will be given. Intention of doing such work must be indicated at the time of registration, and the student must also attain grade B in order to obtain such credit.

Three of the subjects in this department (4M, 5M, and 9) are given at the Medical School, 416-430 Huntington Avenue, Boston. These subjects may be taken by candidates for the bachelor's degree, and in this way students contemplating the study of medicine may anticipate one year of their professional course. Those who wish these subjects to count for the bachelor's degree must have previously taken at least Biology 3.

There are three well-lighted laboratories, furnished with every requisite for good work, including microscopes, microtomes, reagents, and abundant material for illustration and dissection. There is also a department library containing more than 4,000 volumes and over 9,300 pamphlets and parts of volumes, while the college library contains the proceedings of many learned societies, both American and foreign. Besides these, proximity to Boston and Cambridge gives easy access to library facilities unequaled in any other part of America. There is required from all students taking laboratory subjects a laboratory fee of two dollars and fifty cents a term for each subject, payable in advance.

SUBJECTS

1. General Biology. Given in 1912–13 to Tufts; in 1913–14 to Jackson. *Two lectures and four hours of laboratory work. Counting as six term hours.* PROFESSORS KINGSLEY AND LAMBERT

2. Morphology of Invertebrates. Given in 1912–13 to Jackson; in 1913–14 to Tufts. *Two lectures and four hours of laboratory work. Counting as six term hours.* PROFESSORS KINGSLEY AND LAMBERT

3. Morphology of Vertebrates. Continuation of Biology 2. Given in 1912–13 to Tufts; in 1913–14 to Jackson. *Two lectures and four hours of laboratory work. Counting as six term hours.* PROFESSOR KINGSLEY

4M. Human and Comparative Physiology. Lectures, recitations, conferences, and laboratory work. *Hours and credit to be arranged.* (S) PROFESSOR DEARBORN

Biology 4M is given at the Tufts Medical School, Boston.

5M. Histology, Medical. Lectures, quizzes, and laboratory work. *Hours and credit to be arranged.* (F) PROFESSOR BATES AND DR. WINSLOW

Biology 5M is given at the Tufts Medical School, Boston.

6. Systematic Zoology. Laboratory work in the identification and classification of specimens. *Counting as three term hours.* (F) or (S) PROFESSOR KINGSLEY

Biology 6 requires ability to read French and German.

7. Botany. Lectures and laboratory work. *Two lectures and four hours of laboratory work, to be arranged. Counting as six term hours.*
Assistant Professor Lambert

8. Special Work. The investigation of some problem. *Three hours or more of credit, at the rate of thirty-two hours of laboratory work for one hour of credit. To be arranged.* Professor Kingsley

9. Human Anatomy. Lectures, quizzes, and dissection. *Hours and credit to be arranged.* (F)

Biology 9 is given at the Tufts Medical School, Boston.
Professor H. H. Germain

10. Evolution. Lectures, recitations, essays, and required reading. *One hour a week, to be arranged.* (S) Professor Kingsley

54 GEOLOGY

Professor Lane

The subjects offered in the department of Geology do not form a sequence, but are intended to give different classes of students that knowledge of geology and mineralogy which they need. In all cases, they aim to include some real grasp upon the structure and history of the earth, the problems presented in the study thereof, and the modes of attack upon those problems.

The illustrative collections in these lines are ample. Besides exhibition specimens in the Barnum Museum, there is a working collection illustrating mineralogy, lithology, and dynamical and historical geology. These are supplemented with maps, diagrams, photographs, and lantern slides. The work in each subject consists of lectures and recitations, together with work in the laboratory and in the field. Excursions are taken to neighboring points that illustrate certain phenomena. Tufts College is well placed for field work and for the study of various natural processes.

SUBJECTS

1. Physical Geology and Geography. Primarily intended for Jackson students who may wish to teach Physical Geography in high schools. The text-books are Tarr (New Physical Geography) and Tarr & Von Engelin (Laboratory Manual of Physical Geography). A little geology will be

given by lectures. There will be some required Saturday afternoon excursions. *Hours to be arranged.* (S) *Counting as three term hours.*
PROFESSOR LANE

21. Physical Geography and Meteorology. *Counting as one term hour.* (F)
PROFESSOR LANE

22. Physical Geology. (F) *Counting as two term hours.*
PROFESSOR LANE

Subjects 21 or 22 cannot be taken separately, and together count as one laboratory course.

23. Economic Geology. The various natural sources of supply to man's needs and the economic and geologic principles governing their valuation development. The instruction is chiefly by lectures and the work is mainly collateral reading. One book is required ($2.00). Either Mineralogy 64-1 or some Geological course is very desirable before taking it, but not absolutely required. (S) *Counting as one term hour.* PROFESSOR LANE

24. Historical Geology. (S) *Counting as two term hours.*
PROFESSOR LANE

Geology 1, or 21 and 22 must precede.

[3. Mathematical Problems presented to geologists. Conferences and critical reading of selected papers and original work. Mathematics 4 must precede Geology 3; Mathematics 6 must precede or accompany it.
PROFESSOR LANE]

[4. Field Geology. Conference, one hour; field work, six hours a week; open to students who have taken Geology 24. *First part of first and last part of second half-year. Counting as three term hours.* PROFESSOR LANE]

64 MINERALOGY

Professor Lane would be glad to meet with and advise students wishing to take a thesis subject in Chemistry or Mathematics of geological, mineralogical or crystallographic interest.

1. Mineralogy and Lithology. (Pirrson.) Open to students who have taken Chemistry 1. *Two recitations and four hours of laboratory work. Counting as three term hours.* (F) PROFESSOR LANE

2. Crystallography and Optical Mineralogy. Open to students who have taken Mineralogy 1. *Two lectures and four hours laboratory work.* (S) *Counting as three term hours.* PROFESSOR LANE

THEOLOGY

All the subjects offered in the Theological School are open to election by qualified students in the School of Liberal Arts. For details see the announcement of the Crane Theological School.

ENGINEERING

All subjects in the Engineering School are open to election by qualified students in the School of Liberal Arts. For details see the announcement of the Engineering School.

38 MUSIC

PROFESSOR LEWIS

The department of Music offers opportunities to gain a knowledge of musical history and of the principles of composition, as a basis for practical work in music or in musical criticism. The subjects, Elements of Theory, Harmony, General History of Music, and Musical Appreciation may well be taken, however, by students who have no intention of preparing themselves for professional work in the art.

SUBJECTS

9. Musical Appreciation, Elementary. Systematic studies in musical essentials from the listener's standpoint. (F) PROFESSOR LEWIS

For Music 9 no technical preparation is requisite, but ability to recognize a melody is presupposed. Ability to follow a piano score is very helpful. Outside reading and laboratory study with automatic instruments are required. Music 9 is given in Tufts and Jackson in alternate years. In 1913–1914 it will be given in Tufts.

10. Musical Appreciation, Intermediate. A continuation of Music 9. (S) PROFESSOR LEWIS

1. Elements of Theory. Lectures, practice, and analysis, with various text-books for reference. (F) PROFESSOR LEWIS

Only acquaintance with musical notation and with the piano keyboard is required. Music 1 is introductory to Music 21.

21. Harmony. Lectures and practical work, based on Chadwick's Manual of Harmony; collateral reading on biography and theory. (S) PROFESSOR LEWIS

22. Advanced Harmony and Elementary Counterpoint. A continuation of Music 21. (F) PROFESSOR LEWIS

A full equivalent of Music 1 and 21 must have been done by students who wish to begin their college work with Music 22.

[3. Sight-reading in Song, and Harmonic Analysis. (S) PROFESSOR LEWIS]

Only those who have finished Music 22 may take Music 3. The harmonic analysis begun in Music 22 is continued, with special attention to the more difficult problems of modern music. Harmonic Analysis, by B. Cutter, and Melodia, by Cole and Lewis, are the text-books.

24. Counterpoint. Lectures and practical work, based on the manuals of Goetschius, Spalding, and others; collateral reading on biography and theory. (s) PROFESSOR LEWIS

Laboratory work with the automatic instruments is required.

[6. General History of Music, from the earliest times to the present day, with special attention to the period since the death of Palestrina. Lectures, with various treatises for reference. (s) PROFESSOR LEWIS]

25. Studies in one or more of the following subjects: Canon, Fugue, Orchestration, Form, Free composition, Musical History, Musical Criticism. PROFESSOR LEWIS

The studies may be directed by lectures, or may consist of individual work of students under the supervision of the instructor. Requirements as to previous studies in Music and in foreign languages will be given on application to the instructor.

88 PHYSICAL TRAINING AND HYGIENE

DR. MARTIN

The aim of the department is to secure the interest and participation of the students in such exercises and training as all students need for corrective, hygienic, and recreative purposes.

The object of the work is to give the student such knowledge of the structure and composition of the human body as will enable him to understand its functions and keep it in good condition: to gain a healthy body, erect carriage, self-control, muscular co-ordination, and symmetrical development. These objects are sought by lectures on anatomy, physiology and personal hygiene, regular class exercises in the gymnasium during the winter, and by out-door work in the fall and spring, when the weather is suitable. A medical examination is made and physical measurements and strength tests of all students are taken at the beginning and end of the gymnasium course, and at other times when necessary. These enable the instructor to prescribe special exercises to overcome defects. Students may also receive personal advice with reference to habits of life.

Weekly lectures on hygiene are given during the first term Outdoor competitive games in spring and fall, and indoor exercises during the winter—calisthenics; Swedish work; Indian club, wand, and dumb-bell drills, boxing and wrestling—are required two hours a week, from October to May, of all undergraduate students, for the first two years following entrance. Participation in any one of the organized sports may be substituted for the required work, for the time of such participation. The work is optional the remaining years of the course.

The intention of the department is to make physical training of such character that the weakest as well as the strongest can engage in it with profit.

ELECTIVE PHYSICAL TRAINING

[An advanced course, including theory and practice. Hygiene, elementary anatomy, physiology, first aid; the teaching of gymnastics, graduation of exercises, gymnasium management; advanced drills and apparatus work. Lectures, two hours a week (F); drills, two hours a week (F) and (S). *Counting as three term hours.*]

Time-Schedule for the year of 1912-13

(Subject to Revision)

SCHOOL OF LIBERAL ARTS AND JACKSON COLLEGE

The hour for the Tufts division is indicated by the letter T; for the Jackson division by J. Initials are used for the days of the week, thus; *MWF*, Monday, Wednesday, and Friday; *TTS*, Tuesday, Thursday, and Saturday. The numeral following these letters indicates the program-hour, not the time of day. The working day is divided into eight periods, beginning respectively at 8.00, 8.45, 9.45, 11.05, 12.05, 2.05, 3.05, and 4.05; and the hours are numbered in that order. Thus, *MWF 2* means 8.45 on the respective days; *TTS 4* means 11.05, etc.

12-1	English T *TTS 2;* J *TTS 4*
12-2	English T *TTS 2;* J *TTS 4*
12-12	Am. Lit. T *MWF 2;* J *MWF 5*
12-17	Shakespeare T J *MWF* 2
12-18	Shakespeare T J *MWF 2*
12-24	Poetry 19th Century T J *MWF 4*
12-25	Development of Drama T J *TTS 4*
12-26	Development of English Novel *To be arranged*
12-28	Seminar T J *TT 67*
12-34	Tennyson and Browning T J *MWF 3*
12-36	Carlyle *To be arranged*
18-1	Oratory *To be arranged*
22-1	German T *MWF 4;* J *MWF 5*
22-2	German T *MWF 3;* J *TTS 3*
22-3	German T *MWF 4;* J *TTS 2*
22-3B	German T J *TTS 5*
22-4	German T J *MWF 5*
22-5	German T J *MWF 7*
22-6	German T J *MWF 3*
32-1	French T J *MWF 4*
32-2	French T *MWF 3;* J *MWF 7*
32-3	French T J *MWF 6*
32-3B	French T J *TTS 5*
32-4	French T J *TTS 3*
32-5	French T J *TTS 2*
32-6	French *To be arranged*
42-1	Italian T J *MWF 4*
52-1	Latin T *MWF 7;* J *MWF 2*
52-2	Latin T J *TTS 4*
52-3	Latin T J *TTS 3*
52-5	Latin T J *Tu 6*
52-6	Latin T J *Th* 2
62-2	Greek T J *TTS 3*
62-3	Greek *To be arranged*
62-4	Greek T J *MWF 3*
62-6	Greek *To be arranged*
62-7	Greek *S 4*
28-4	Class. Arch. T J *MWF 4*
28-5	Class. Arch. T J *MWF 4*
28-7	Greek Hist. T J *MWF 5*
28-8	Roman Hist. T J *MWF 5*
16-1	Philosophy T J *TTS 4*
16-2	Philosophy T J *TTS 4*
16-3	Philosophy T J *MWF 4*
16-4	Philosophy T J *MWF 4*
16-55	Psychology T J *MWF 2*
16-6	Ethics-Theory T J *TTS 5*
16-7	Ethics App. T J *TTS 5*
16-8	Ethics-Historical *To be arranged*
16-15	Philosophy T J *TTS 3*

26-1	Education T J *TTS 3*
26-2	Education T J *TTS 3*
36-1	History T *MWF 5;* J *TTS 4*
36-2	History T J *MWF 2*
36-3	History T J *MWF 4*
36-6	History T J *TTS 3*
36-7	History T J *TTS 3*
36-19	History T J *TTS 2*
36-15	History *To be arranged*
46-21	Hist. and Pub. Law T J *MWF 4*
46-5	Hist. and Pub. Law T J *MWF 3*
46-9	Hist. and Pub. Law T J *MWF 3*
66-1	Pol. Science T J *MWF 3*
66-2	Pol. Science T J *MWF 4*
66-22	Pol. Science T J *MWF 4*
66-3	Sociology T J *M 6, F 67*
66-13	Sociology *To be arranged*
66-6	Pol. Science T J *MWF 5*
66-16	Pol. Science T J *MWF 5*
66-17	Pol. Science T J *TTS 5*
66-7	Pol. Science *To be arranged*
66-9	Pol. Science *To be arranged*
14-3	Trig. T *MWF 2* and *5;* J *MWF 3*
14-1	Algebra T *MWF 2* and *5;* J *MWF 3*
14-2	Solid Geom. T J *MWF 5*
14-4	Anal. Geom. T J *TTS 4*
14-5	Math. T J *TTS 4*
14-6	Math. T J *MWF 7*
14-7	Math. *To be arranged*
14-8	Math. *To be arranged*
14-9	Math. *To be arranged*
14-10	Math. *To be arranged*
14-12	Math. T J *TTS 1*
24-1	Physics T *TTS 4;* J *TTS 2*
31-7	Physics Lab. T *Tu* or *Th 678*
24-14	Physics Lab. T J *WF 678*
24-2	Physics T J *MWF 2*
24-6	Physics *To be arranged*
24-9	Physics T J *MWF 6*
24-10	Physics *To be arranged*
24-11	Physics *To be arranged*
34-1	Chemistry T J *Tu 5678 Th 5*
35-2	Qual. Anal. T J *MF 123* or *678*
35-3	Qual. Anal. T J *MF 678*
34-4	Quan. Anal. T J *TTS 123*
34-5	Quan. Anal. T J *TTS 123*
34-7	Fire Assay T J *MF 678*
34-8	Metallurgy T J *WF 4*
34-9	Gas Anal. T J *F 123*
35-10	Org. Chem. T J *TTS 5; W 123*
34-11	Chemistry T J *MF 5; W 123*
34-12	Chemistry *To be arranged*
34-17	Chemistry T J *TT 8; M 123*
34-16	Chemistry *To be arranged*
34-19	Chemistry *To be arranged*
44-1	Biology T *TT 567*
44-2	Biology J *MF 123*
44-3	Biology T *TT 123*
44-6	Biology *To be arranged*
44-7	Botany T J *To be arranged*
44-8	Biology *To be arranged*
44-10	Biology *To be arranged*
54-1	Geology *To be arranged*
54-21	Geology T J *W 5*
54-22	Phys. Geology T J *W 678; F 6*
54-23	Econ. Geology T J *W 5*
54-24	Hist. Geology T J *W 678; F 6*
64-1	Mineralogy T J *MW 4; TT 67*
64-2	Mineralogy *To be arranged*
38-1	Music T J *Tu 8; Th 67*
38-9	Music J *TTS 2*
38-10	Music J *TTS 2*
38-21	Music T J *Tu 8; Th 67*
38-22	Music *To be arranged*
38-24	Music *To be arranged*
38-25	Music *To be arranged*

ENGINEERING SCHOOL

Faculty of the Engineering School

RESIDENCE*

WILLIAM L. HOOPER, A.M., PH.D., ACTING PRESIDENT,
and Professor of Electrical Engineering 124 Professors Row

GARDNER C. ANTHONY, A.M., SC.D., DEAN . . 14 Professors Row
Professor of Technical Drawing. Acting Head of Department of Mechanical Engineering

WILLIAM H. REED, JR. A.M., SECRETARY . 81 Walnut Ave., Roxbury
Assistant Professor of Modern Languages

ALFRED C. LANE, A.M., PH.D. 1775 Massachusetts Ave., Cambridge
Pearson Professor of Geology and Mineralogy

FRANK B. SANBORN, C.E., M.S. . . 8 Buena Vista Park, Cambridge
Professor of Civil Engineering

FRANK W. DURKEE, A.M. . . . . 38 Professors Row
Professor of Inorganic Chemistry

EDWARD H. ROCKWELL, S.B. . . . 133 Powder House Boulevard, W. Somerville
Professor of Structural Engineering

CHARLES H. CHASE, S.B. . . . . 39 Lincoln St., Stoneham
Professor of Steam Engineering

SAMUEL C. EARLE, A.M. . . . . 45 Sawyer Avenue
Professor of English

HENRY C. METCALF, A.B., PH.D. . . 31 Sheffield Road, Winchester
Jackson Professor of Political Science

SAMUEL L. CONNER, B.S., M.S . . . . 23 Bellevue St.
Assistant Professor of Railroad Engineering

WILLIAM R. RANSOM, A.M. . . . . 29 Sawyer Avenue
Professor of Mathematics

GEORGE F. ASHLEY . . . . 47 Avon St., Somerville
Assistant Professor of Technical Drawing

EDWIN B. ROLLINS, B.S. . . . . 38 Capen St.
Assistant Professor of Electrical Engineering

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*The post office address is Tufts College, Mass., unless otherwise indicated.

CHARLES E. STEWART, S.B. . . . . 389 Boston Ave.
Assistant Professor of Mechanic Arts

PHILIP H. COBB, A.B., PH.D. . . . . Dean Hall, 5
Assistant Professor of Organic and Physical Chemistry

HENRY H. MARVIN, B.S., PH.D. . . . . 59 West Adams St.
Assistant Professor of Physics

MELVILLE S. MUNRO, B.S. . . . . 101 Talbot Avenue
Instructor in Electrical Engineering

FRANK E. SEAVEY, A.B. . . . . 9 Teele Ave., W. Somerville
Instructor in English

FRANK W. POTE, B.S. . . . . 9 Marshall St., Medford
Instructor in Physics

RICHARD C. SMITH, B.S. . . . . 15 Warren St., W. Medford
Instructor in Structural Engineering

ALEXANDER DILLINGHAM, A.M. . . . . 54 Curtis Ave.
Instructor in Mathematics

HARRY G. PAYROW, B.S. . . . . 11 Dearborn St., Medford
Instructor in Civil Engineering

CARL L. SVENSEN, B.S. . . . . 46 Hillsdale Road
Instructor in Mechanical Engineering

CONRAD A. ADAMS, B.S. . . . . 38 Whitfield Rd., West Somerville
Instructor in Mechanic Arts

NATHANIEL H. KNIGHT, B.S. . . . . 65 Pearson Rd.
Instructor in Physics

CROSBY F. BAKER, M.S. . . . . East, 10
Instructor in Chemistry

MERRILL C. HILL, A.B. . . . . West, 17
Instructor in Modern Languages

OSCAR MARTIN, M.D. . . . . 18 Fairmount St.
Instructor in Physical Training and Director of the Gymnasium

CHARLES GOTT, A.B. . . . . East, 10
Instructor in English

COMMITTEE ON PROMOTIONS

Dean Anthony, *Chairman*; Professors Durkee, Rockwell, and Assistant Professors Ashley and Rollins.

COMMITTEE ON CURRICULUM

Dean Anthony, *Chairman*; Professors Hooper, Sanborn, Durkee Rockwell, Chase, and Earle.

Courses of Instruction

The School offers courses in Civil Engineering, Structural Engineering, Mechanical Engineering, Electrical Engineering, and Chemical Engineering, each leading to the degree of Bachelor of Science, and requiring four years of study.

While much of the instruction is of a technical character relating to the several branches of engineering, the first aim of the School is toward a broad intellectual development, and an appreciation of the duties of the educated man. An effective correlation of the subjects serves to promote a great degree of unity and to secure an educational result both scientific and cultural.

During the first two years the course of study and elective privileges are the same for all departments. The importance of developing the power to write clear and concise English is emphasized by correlating this subject with the work of other departments, thus making it as much a fundamental for technical training as it is for a literary education. The required courses in Mathematics, Physics, and Chemistry, common to every field of engineering, are studied during this period, thus preparing the student for the applied subjects which characterize the work of the Junior and Senior years. A thorough course in the theory and practice of Technical Drawing and of Mechanic Arts is required in all departments during the first two years.

One hundred and forty term hours are required for graduation, this being the equivalent of about fifty-two hours of work per week. One term hour signifies one recitation per week for one term, or one laboratory period of three hours for a term, the recitation period implying two hours of preparation. A grade of C or higher must be obtained in at least 70 term hours.

On the pages immediately following the Courses of Instruction will be found an index of the subjects, which gives a complete view of the system of numbering. The figures following the names of subjects represent the credit in term hours.

Following this index will be found detailed descriptions of the subjects in numerical order.

Permission to take a program in excess of eighteen term hours, except when required by the curriculum, must be obtained by petition to the Committee on Promotions.

FRESHMAN YEAR

[Alike for all courses.]

FIRST TERM			SECOND TERM		
11-1	English	3	11-2	English	3
13-2	†French or	3	13-2	†French or	3
15-2	†German		15-2	†German	
21-1	Drawing	5	21-5	Descriptive Geometry	3
29-1	Mathematics	3	25-1	Mechanic Arts	3
29-2	Mathematics	3	29-3	Mathematics	3
88	Physical Training	½	31-1	Physics	3
			88	Physical Training	½
	Total	17½		Total	18½

SOPHOMORE YEAR

[Alike for all courses.]

FIRST TERM			SECOND TERM		
21-8	Drawing	3	21-13	Mechanism	3
29-4	Mathematics	3	29-5	Mathematics	3
31-2	Physics	3	31-7	Physical Laboratory	1½
31-7	Physical Laboratory	1½	35-1	Chemistry	3
35-1	Chemistry	3	41-3	Surveying	2
41-3	Surveying	1	45-21	Mechanics	3
88	Physical Training	½	88	Physical Training	½
	Total	15		Total	16

Electives	*Electives*
English, or subjects in other departments, subject to approval.	English, or subjects in other departments, subject to approval.

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†As the course to be pursued in modern language is dependent on the preparation of each student, definite instruction for the selection thereof is given at the time of registration.

CIVIL ENGINEERING

The Civil Engineering graduates enter a great variety of positions. Their work may include municipal engineering, general surveying, water-supplies, sewerage, water-powers, bridges, mill buildings, fire protection, foundations, electric railroads, steam railroads, highways, or contracts and specifications; and these positions may require drafting, computations, or field construction. It therefore becomes the duty of the Department to qualify its students for various fields of employment. The basis of instruction is general engineering education and not specialization. In fact it is recommended that those students who find that they would like to specialize should plan to do so by a graduate year of study after their four years of general engineering education in the Civil Engineering course.

By referring to the detailed list of studies published on another page of this catalogue, it may be seen, however, that a student can select for his Senior year elective studies and a thesis which will give him opportunity to devote most of the year to his chosen field in railroads, hydraulics, or municipal engineering.

In order that the student may observe a direct application of the theory that he is studying, the Department conducts many laboratory and field courses. These include field practice in topographical and railroad surveying (for which the college location affords excellent advantages), river gaugings, and laboratory tests of metals, cements, road materials, and hydraulic appliances, beside trips of inspection, and tests at near-by industrial or municipal plants. This close association of theory and practice adds to the interest and progress of the student.

CIVIL ENGINEERING

JUNIOR YEAR

	First Term			Second Term	
35-2	Qualitative Analysis	2	41-13	Railroad Engineering	3
41-12	Railroad Surveying	3	41-21	Highways	2
41-40	Hydraulics	3	41-43	Hydraulic Measurements	2
45-1	Applied Mechanics	3	45-2	Applied Mechanics	3
45-12	Applied Mechanics Laboratory	1	47-3	Structural Design	3
51-1	Steam Engine	3	81-2	Economics	3
81-2	Economics	3			
	Total	18		Total	16
	Electives			*Electives*	
11-	English		11-	English	
14-	Mathematics		14-	Mathematics	
61-3	Dynamo-Electric Machinery	3	51-3	Thermodynamics	3
64-1	Mineralogy				

SENIOR YEAR

	First Term			Second Term	
41-14	Railroad Engineering	3	41-48	Sewerage	3
41-46	Water Supplies	3	41-99	Thesis	3-5
45-3	Structural Mechanics	3			
[47-1	Roofs and Bridges	3]			
	Total	12		Total	6-8
	Electives			*Electives*	
11-	English		11-	English	
14-1	Mathematics		14-	Mathematics	
[17-1	Spanish	3]	[17-1	Spanish	3]
35-18	Chemistry of Road-building Materials	3	35-18	Chemistry of Road-building Materials	3
41-31	Geodesy	2	41-17	Railroad Economics	3
41-47	Water Power Engineering	3	41-51	Fire Protection Engineering	2
41-95	Civil Engineering Topics	2	41-63	Contracts	3
47-7	Bridge Design	3	47-2	Theory of Structures	3
61-3	Dynamo-Electric Machinery	3	47-8	Structural Design	2
64-	Mineralogy		54-1	Geology	3
66-	Economics		61-10	Electrical Laboratory	2
			66-	Economics	

STRUCTURAL ENGINEERING

The course of instruction in Structural Engineering is arranged so as to afford the student a comprehensive training in the fundamentals of civil engineering construction, and leads to the degree of Bachelor of Science in Civil Engineering. In addition to the subjects of the first two years, the course includes, as prescribed subjects, applied mechanics; testing of the materials of construction; stresses in framed structures; design of masonry and reinforced concrete structures and foundations; the design of buildings and bridges; hydraulics; sanitary engineering; steam engine; railroad surveying and economics. In addition to the prescribed subjects, it is possible for the student to elect courses in English, Spanish, mineralogy, geology, geodesy, contracts, dynamo electric machinery, highways, hydraulic engineering, railroad engineering, and advanced courses in mathematics.

The distinctive work of the course, however, is based upon the principles involved in the theory of structures, and in their design and construction. The study of this subject is commenced at the beginning of the junior year and is carried through two full years without intermission, partly in order to develop the power of concentration by the continued study of a highly mathematical and scientific body of co-ordinated principles, and partly because these same principles happen to be fundamental and therefore necessary for a complete understanding of civil engineering structures.

Special emphasis is laid upon the design by the student of typical structures which are likely to be met in practice. By this means he fixes in mind the principles of mechanics and obtains a truer perspective of their application for stability, safety, and economy of construction. The course is designed as an educational preparation not only for those who expect to follow construction professionally as engineers, but for others who may eventually be connected with public or private works as designers, inspectors or in administrative capacities.

STRUCTURAL ENGINEERING

JUNIOR YEAR

FIRST TERM

35-2	Qualitative Analysis	2
41-12	Railroad Surveying	3
41-40	Hydraulics	3
45-1	Applied Mechanics	3
45-12	Applied Mechanics Laboratory	1
51-1	Steam Engine	3
81-2	Economics	3
	Total	18

Electives

11-	English	
14-	Mathematics	
61-3	Dynamo-Electric Machinery	3

SECOND TERM

41-43	Hydraulic Measurements	2
45-2	Applied Mechanics	3
47-3	Structural Design	3
81-2	Economics	3
	Total	11

Electives

11-	English	
14-	Mathematics	
24-2	Electricity and Magnetism	3
41-13	Railroad Engineering	3
41-21	Highways	2
51-3	Thermodynamics	3
51-13	Mechanics of Machinery	3
61-10	Electrical Laboratory	2

SENIOR YEAR

FIRST TERM

41-46	Water Supplies	3
45-3	Structural Mechanics	3
[47-1	Roofs and Bridges	3]
47-7	Bridge Design	3
47-95	Structural Topics and Reports	2
	Total	14

Electives

11-	English	
14-	Mathematics	
17-1	Spanish	3]
41-14	Railroad Engineering	3
41-31	Geodesy	2
41-47	Water Power Engineering	3
61-3	Dynamo-Electric Machinery	3
64-1	Mineralogy	
66-	Economics	

SECOND TERM

47-2	Theory of Structures	2
47-8	Structural Design	3
47-99	Thesis	3-5
	Total	8-10

Electives

11-	English	
14-	Mathematics	
[17-1	Spanish	3]
41-17	Railroad Economics	3
41-48	Sewerage	3
41-51	Fire Protection Engineering	2
41-63	Contracts	3
54-1	Geology	3
66-	Economics	
61-10	Electrical Laboratory	2

MECHANICAL ENGINEERING

The course of instruction in mechanical engineering relates particularly to the generation and transmission of power; the design and construction of machinery; the economics of production and labor.

The subject of steam is begun with the Junior year and continued through the Senior year, giving full consideration to the mechanical theory of heat and the properties of steam and gases, based on the preparatory courses in physics and chemistry. It comprises the study of steam engines and boilers, together with their auxiliaries, by text book, laboratory tests, and design. Gas producers, gas engines, and turbines are also given the attention which their importance demands. Both required and elective courses in Electricity are given at the same time, thus giving the student a comprehensive treatment of the power problem.

The subject of mechanism is introduced in the Sophomore year and followed by the mechanics and dynamics of machinery in the Junior and Senior years. These courses are paralleled by laboratory practice and a thorough training in applied mechanics and the testing of materials. The courses in design are closely correlated with the development of theory, and supplemented by shop practice and many inspection trips to the industrial plants in the vicinity,

The third and equally important division of this course is the consideration of problems relating to the manufacture of machinery. This comprises the economic methods of production, and the consideration of labor problems. These subjects will be presented to the prospective engineer in such form as to enable him to comprehend their importance and the principles involved.

The course aims to give the graduate a thorough knowledge of the fundamentals in mechanical engineering so that he may successfully cope with the problems in the shop and engineering office, the power plant, or in factory organization and administrative engineering.

MECHANICAL ENGINEERING

JUNIOR YEAR

First Term			Second Term		
25-8	Mechanic Arts	3	41-40	Hydraulics	3
35-2	Qualitative Analysis	2	45-2	Applied Mechanics	3
45-1	Applied Mechanics	3	51-3	Thermodynamics	3
45-12	Applied Mechanics Laboratory	1	51-13	Mechanics of Machinery	3
51-1	Steam Engine	3	51-21	Mechanical Engineering Lab.	3
81-2	Economics	3	81-2	Economics	2
	Total	15		Total	17
	Electives			*Electives*	
11-	English		11-	English	
14-	Mathematics		14-	Mathematics	
61-3	Dynamo-Electric Machinery	3	24-2	Electricity and Magnetism	3
			61-10	Electrical Laboratory	2
			61-5	Alt. Current Machinery	3

SENIOR YEAR

First Term			Second Term		
51-7	Engine Design	3	51-8	Power Plant Design	3
51-15	Dynamics of Machinery	3	51-19	Production Engineering	3
51-17	Machine Design	3	51-27	Mechanical Engineering Lab.	4
51-31	M. E. Lab. (Gas Engines)	3	51-99	Thesis	3-5
	Total	12		Total	13-15
	Electives			*Electives*	
11-	English		11-	English	
14-	Mathematics		14-	Mathematics	
41-47	Water Power Engineering	3	41-51	Fire Protection Engineering	2
45-3	Structural Mechanics	3	41-63	Contracts	3
47-1	Roofs and Bridges	3	61-5	Alt. Current Machinery	3
51-95	Mech. Engineering Topics	2	61-10	Electrical Laboratory	2
61-3	Dynamo-Electric Machinery	3	66-	Economics	3
61-21	Dynamo Design D. C	3			
66-	Economics	3			

ELECTRICAL ENGINEERING

The aim of this course is to lay a broad foundation of Electrical Science upon which the future technical attainments of the electrical engineer may rest.

The purely electrical work extends throughout the junior and senior years; that in the junior year being devoted to the more elementary theory, and the practice of the simpler tests and measurements, while that in the senior year is largely directed to the more advanced study of alternating currents and electrical machinery and to the more complicated tests of the alternating current and dynamo laboratories, and to the consideration of the general problems of Electrical Engineering.

Throughout the course much attention is paid to the numerical solution of electrical problems, as it is believed that in no other way can theory and principles be so quickly and so clearly comprehended. A considerable amount of time is given to the design of electrical apparatus and machinery and many students during their course construct or assist in the construction of some instrument or piece of electrical machinery of commercial finish and dimensions.

The graduates of this course are advised to spend a couple of years in the apprenticeship courses or testing departments of the large electrical manufacturing companies in order that they may get an intimate practical acquaintance with electrical apparatus and experience in handling and operating heavy machinery.

Everywhere the attempt is made to present the data and methods of Electrical Engineering by the scientific development of physical principles, it being assumed that the empirical side of the profession may best be acquired by practice after graduation.

ELECTRICAL ENGINEERING

JUNIOR YEAR

FIRST TERM

35-2	Qualitative Analysis	2
45-1	Applied Mechanics	3
45-12	Applied Mechanics Laboratory	1
51-1	Steam Engine	3
61-3	Dynamo-Electric Machinery	3
81-2	Economics	3
	Total	15
	Electives	
11-	English	
14-	Mathematics	
25-8	Mechanic Arts	3

SECOND TERM

41-40	Hydraulics	3
45-2	Applied Mechanics	3
61-4	Electrical Laboratory	4
61-5	Alt. Current Machinery	3
81-2	Economics	3
	Total	16
	Electives	
11-	English	
14-	Mathematics	3
24-2	Electricity and Magnetism	3
51-3	Thermodynamics	3
51-13	Mechanics of Machinery	3
51-21	Mechanical Engineering Lab.	2

SENIOR YEAR

FIRST TERM

61-7	Dynamo Laboratory	4
61-11	Alternating Currents	3
61-15	Electrical Engineering	3
61-21	Dynamo Design D. C.	3
	Total	13
	Electives	
11-	English	
14-	Mathematics	
[17-1	Spanish	3]
25-8	Mechanic Arts	3
41-47	Water Power Engineering	3
45-3	Structural Mechanics	3
51-17	Machine Design	3
61-17	Telephone and Telegraph	3
66-	Economics	

SECOND TERM

61-16	Electrical Engineering	3
61-99	Thesis	3-5
	Total	6-8
	Electives	
11-	English	
14-	Mathematics	
[17-1	Spanish	3]
41-63	Contracts	3
61-22	Dynamo Design A. C.	3
61-95	Electrical Topics	3
66-	Economics	

CHEMICAL ENGINEERING

The course in Chemical Engineering covers a period of four years, and leads to the degree of Bachelor of Science in Chemical Engineering.

The subjects in this course have been arranged to give the training in mathematics, physics, chemistry, and mechanical and electrical engineering that will assist the graduates of the department in solving the mechanical, electrical and chemical problems that present themselves when chemistry is applied in practical ways. Subjects intended for general training, the greater part of the pure mathematics, and the less technical engineering subjects have purposely been introduced early in the course. This arrangement allows much time for the study of subjects in chemistry and advanced engineering in the last two years. The mathematical, physical, and general engineering subjects, as well as subjects that are intended for general culture, correspond, for the most part, to those of the course in mechanical and electrical engineering.

In chemistry the subjects are numerous enough to train the student thoroughly in theoretical and descriptive inorganic and organic chemistry, to give him a working knowledge of the different branches of chemical analysis, and to make him familiar with many of the practical applications of chemistry. The chemical and engineering subjects are taught, so far as it is possible, in the laboratories, and excursions are made from time to time to plants where technical chemical operations are performed.

Young men who graduate from the course in chemical engineering find employment in constructing and operating plants where chemistry is applied commercially, such as gas-works, dye-works, bleacheries, paper and pulp mills, acid and alkali manufactories.

CHEMICAL ENGINEERING

JUNIOR YEAR

FIRST TERM

35-2	Qualitative Analysis	2
35-4	Quantitative Analysis	3
35-10	Organic Chemistry	4
45-1	Applied Mechanics	3
45-12	Applied Mechanics Laboratory	1
51-1	Steam Engine	3
81-2	Economics	3
	Total	19

Electives

11-	English	
14-	Mathematics	
	German 15 or 22	3

SECOND TERM

35-3	Qualitative Analysis	2
35-4	Quantitative Analysis	3
35-10	Organic Chemistry	4
41-40	Hydraulics	3
45-2	Applied Mechanics	3
81-2	Economics	3
	Total	18

Electives

11-	English	
14-	Mathematics	
	German 15 or 22	3
24-2	Electricity and Magnetism	3

SENIOR YEAR

FIRST TERM

35-5	Quantitative Analysis	3
35-9	Gas Analysis	1
35-11	Theoretical Chemistry	3
35-17	Applied Chemistry	3
61-3	Dynamo-Electric Machinery	3
	Total	13

Electives

11-	English	
14-	Mathematics	
	German 15 or 22	3
[17-1	Spanish	3]
41-46	Water Supplies	3
54-	Geology	
64-1	Mineralogy	
66-	Economics	

SECOND TERM

35-5	Quantitative Analysis	3
35-7	Fire Assay	2
35-8	Metallurgy	2
35-11	Theoretical Chemistry	3
35-17	Applied Chemistry	3
35-99	Thesis	3-5
	Total	16-18

Electives

11-	English	
14-	Mathematics	
	German 15 or 22	3
[17-1	Spanish	3]
41-48	Sewerage	3
54-	Geology	
61-10	Electrical Laboratory	2
66-	Economics	

Index to Subjects

No.	Term Hours	Subject
		11 ENGLISH
11-1	3	English (First Term)
11-2	3	English (Second Term)
11-4	2	Narration
11-5	3	General English Literature
11-6	2	English Literature, 19th Century
11-7	2	Advanced English Literature
11-8	2	Technical Exposition
11-9	2	Technical Theses
11-13	3	Argumentation
		13 FRENCH
13-1	*6	French
13-2	*6	French
		15 GERMAN
15-2	*6	German
		17 SPANISH
17-1	*6	Spanish
		21 DRAWING
21-1	5	Drawing
21-5	3	Descriptive Geometry
21-8	3	Drawing
21-13	3	Mechanism
		25 MECHANIC ARTS
25-1	3	Pattern Making
25-8	3	Metal Work
		29 MATHEMATICS
29-1	3	Computation
29-2	3	Analytical Geometry and Algebra
29-3	3	Freshman Calculus
29-4	3	Sophomore Calculus
29-5	3	Sophomore Calculus
		31 PHYSICS
31-1	3	Mechanics and Sound
31-2	3	Electricity and Magnetism, and Light
31-7	§3	Physical Laboratory
		35 CHEMISTRY
35-1	*6	General Inorganic Chemistry
35-2	2	Qualitative Analysis
35-3	2	Qualitative Analysis, Advanced
35-4	*6	Quantitative Analysis
35-5	*6	Quantitative Analysis, Technical
35-7	2	Fire Assay
35-8	2	Metallurgy of Iron and Steel
35-9	1	Technical Gas Analysis
35-10	‖8	Organic Chemistry
35-11	*6	Theoretical Chemistry
35-17	*6	Applied Chemistry
35-18	*6	Chemistry of Road-building Materials
35-99	3-5	Chemical Engineering Thesis

No.	Term Hours	Subject
		41 CIVIL ENGINEERING
41-3	†3	Surveying
41-12	3	Railroad Surveying
41-13	3	Railroad Engineering
41-14	3	Railroad Engineering
41-17	3	Railroad Engineering Economics
41-21	2	Highways and Cements
41-31	2	Geodesy
41-40	3	Hydraulics
41-43	2	Hydraulic Measurements
41-46	3	Water Supplies
41-47	3	Water Power Engineering
41-48	3	Sewerage
41-51	2	Fire Protection Engineering
41-63	3	Contracts
41-95	2	Civil Engineering Topics
41-99	3-5	Civil Engineering Thesis
		45 APPLIED MECHANICS
45-1	3	Applied Mechanics
45-2	3	Applied Mechanics
45-3	3	Structural Mechanics
45-21	1	Applied Mechanics Laboratory
45-21	3	Mechanics
		47 STRUCTURAL ENGINEERING
47-1	3	Roofs and Bridges
47-2	3	Theory of Structures
47-3	3	Structural Design, Elementary
47-7	3	Bridge Design
47-8	2	Structural Design, Advanced
47-95	2	Structural Topics and Reports
47-99	3-5	Structural Engineering Thesis
		51 MECHANICAL ENGINEERING
51-1	3	Steam Engine
51-3	3	Thermodynamics
51-7	3	Engine Design
51-8	3	Power Plant Design
51-11	2	Mechanical Engineering Problems
51-13	3	Mechanics of Machinery
51-15	3	Dynamics of Machinery
51-17	3	Machine Design
51-27	4	Mechanical Engineering Laboratory
51-29	3	Mechanical Engineering Laboratory
51-31	2	Mechanical Engineering Laboratory
51-95	2	Mechanical Engineering Topics
51-99	3-5	Mechanical Engineering Thesis
		54 GEOLOGY
54-1	3	Physical Geology and Geography
54-3	*6	Mathematical Problems in Geology
54-4	3	Field Geology
54-21	1	Physical Geography and Meteorology

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* Two terms; three term hours each.

† Two terms; first term, one term hour; second term, two term hours.

‖ Two terms; four term hours each.

§ Two terms; one and one-half term hours each.

54 GEOLOGY (Continued)

54-22	2	Physical Geology
54-23	1	Economic Geology
54-24	2	Historical Geology

61 ELECTRICAL ENGINEERING

61-3	3	Dynamo-Electric Machinery
61-4	4	Electrical Laboratory
61-5	3	Alternating Current Machinery
61-7	4	Dynamo Laboratory
61-10	2	Electrical Laboratory
61-11	3	Alternating Currents
61-15	3	Electrical Engineering
61-16	3	Electrical Engineering
61-17	3	Telephone and Telegraph
61-21	3	Dynamo Design, D. C.
61-22	3	Dynamo Design, A. C.
61-95	3	Electrical Topics
61-99	3-5	Electrical Engineering Thesis

64 MINERALOGY

64-1	3	Mineralogy and Lithology
64-2	3	Crystallography and Descriptive Mineralogy

81 POLITICAL ECONOMY

81-2	*6	Elements of Economics
81-4	3	Adminstrative Engineering
66-5	3	Money, Credit, and Banking
66-16	3	Modern Labor Problems
66-17	3	Industrial Organization and Management

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*Two terms: three term hours each.

Examination Group System

The courses are divided into six groups. Each of these groups has assigned to it three periods of four days each for each half year, during which periods all announced examinations in the courses of that group are given. These examinations are limited to the time assigned to these subjects on the program.

Composition of groups and periods allotted to each are as follows:

FIRST HALF-YEAR

Subject	Group	Subject	Group	Subject	Group	Subject	Group
11-1	5	31-2	6	41-14	5	51-11	4
11-5	3	31-7	3	41-31	4	51-15	1
11-7	3	35-1	1	41-40	5	51-17	3
11-9		35-2	4	41-46	6	51-31	5
11-13	5	35-4	1	41-47	2	51-95	3
13-1	3	35-5	1	41-95	3	61-3	5
13-2	6	35-9	4	45-1	1	61-7	5
15-2	6	35-10	5	45-3	1	61-11	6
21-1	6	35-11	5	45-12	3	61-15	3
21-8	4	35-17	3	47-7	2	61-17	2
25-8	4	35-18		47-95	3	61-21	4
29-1	1	41-3	5	51-1	2	81-2	6
29-2	2	41-12	4	51-7	6	81-4	2
29-4	2						

Group 1.	Oct. 14, 15, 16, 17.	Nov. 11, 12, 13, 14.	Jan. 3, 4, 6, 7.
" 2.	Oct. 18, 19, 21, 22.	Nov. 15, 16, 18, 19.	Jan. 8, 9, 10, 11.
" 3.	Oct. 23, 24, 25, 26.	Nov. 20, 21, 22, 23.	Jan. 13, 14, 15, 16.
" 4.	Oct. 28, 29, 30, 31.	Nov. 25, Dec. 3, 4, 5.	Jan. 17, 18, 20, 21.
" 5.	Nov. 1, 2, 4, 5.	Dec. 6, 7, 9, 10.	Jan. 22, 23, 24, 25.
" 6.	Nov. 6, 7, 8, 9.	Dec. 11, 12, 13, 14.	Jan. 27, 28, 29, 30.

Final Examinations January 31, February 1, 3, 4, 5.

SECOND HALF-YEAR

Subject	Group	Subject	Group	Subject	Group	Subject	Group
11-2	5	35-1	1	41-40	6	51-13	5
11-4	5	35-3	6	41-43	5	51-19	4
11-6	3	35-4	1	41-48	4	51-21	3
11-8	3	35-5	1	41-51	2	51-27	5
13-2	6	35-7	6	41-63	1	61-4	4
15-2	6	35-8	4	45-2	1	61-5	2
21-5	4	35-10	5	45-21	4	61-10	2
21-13	6	35-11	5	47-1	6	61-16	4
25-1	6	35-17	3	47-2	6	61-16	4
29-3	2	41-3	5	47-3	2	61-22	
29-5	2	41-13	4	47-8	3	61-95	3
31-1	1	41-17	5	51-3	4	81-2	6
31-7	3	41-21	3	51-8	6		

Group	1.	Mar. 3, 4, 5, 6.	Mar. 31, Apr. 1, 2, 3.	May 9, 10, 12, 13.
“	2.	Mar. 7, 8, 10, 11.	Apr. 4, 5, 7, 8.	May 14, 15, 16, 17.
“	3.	Mar. 12, 13, 14, 15.	Apr. 9, 10, 11, 12.	May 19, 20, 21, 22.
“	4.	Mar. 17, 18, 19, 20.	Apr. 14, 15, 28, 29.	May 23, 24, 26, 27.
“	5.	Mar. 21, 22, 24, 25.	Apr. 30, May 1, 2, 3.	May 28, 29, 31, June 2.
	6.	Mar. 26, 27, 28, 29.	May 5, 6, 7, 8.	June 3, 4, 5, 6.

Final examinations, June 7, 9, 10, 11, 12.

Departments of Instruction

ENGLISH and MODERN LANGUAGES

The instruction in the department of English and Modern Languages is arranged, first, to give the student a working knowledge of his native tongue and of at least one foreign language; second, to deepen his appreciation of literature. The various subjects are closely coördinated, the purpose of all being the development of the student's power of thinking and the broadening of his outlook.

English Subjects are Open for Election as Follows:

	First Term	*Second Term*
Sophomore year	11-13 11-5 11-7 (with permission of instructors)	11-4 11-6 11-8
Junior year	11-13 11-5 11-7 11-9 (must be preceded by 11-8)	11-4 11-6 11-8 11-9 (must be preceded by 11-8)
Senior year	11-13 11-5 11-7 11-9	11-4 11-6 11-8 11-9

11-1 English. A study of the elemental forms of literary and scientific writing: description, exposition, directions, criticism, argument, and narration, with the ultimate aim of helping the student to think for himself. Reading of illustrative literature. *Four periods a week: one lecture, two recitations, and one ten-minute conference.*

First term. Three term hours.

Mr. Seavey, Professor Earle and Mr. Gott

11-2 English. A study of actual problems in expression. Reading in general science and literature under the guidance of weekly lectures. *Four periods a week: one lecture, two recitations, and one ten-minute conference. Preparation, 11-1.*

Second term. Three term hours.

Mr. Seavey, Professor Earle and Mr. Gott

*11-4 **English**. An advanced subject in general composition, including the writing of daily and fortnightly themes. *Three periods a week: two recitations, and one ten-minute conference. Preparation, 11-2 or 12-2.*
Second term. Two term hours. PROFESSOR EARLE and MR. GOTT

11-5 **English.** A brief survey of English literature and history, from the beginnings to about 1750, aiming to broaden the student's appreciation of what he may get from books, and to suggest ways in which the past throws light on the problems of the present. *Four periods a week: three lectures and one ten-minute conference. Preparation, 11-2.*
First term. Three term hours. PROFESSOR EARLE and MR. GOTT

11-6 **English.** A study of some of the most important literary and scientific developments of the nineteenth century. *Four periods a week: three lectures and one ten-minute conference. Preparation, 11-2.*
Second term. Two term hours. PROFESSOR EARLE and MR. GOTT

11-7 **English.** Advanced English literature. A study of some author, period, or type. The definite work to be carried on will be outlined by the instructor in charge each June for the following term. *Three periods a week: two recitations and one thirty-minute conference. Preparation, 11-6.*
First term. Two term hours. PROFESSOR EARLE and MR. GOTT

11-8 **English.** A detailed study of the most important problems of technical writing. *Three periods a week: two recitations and one ten-minute conference. Preparation, 11-2.*
Second term. Two term hours. MR. SEAVEY and MR. GOTT

11-9 **English.** An advanced subject in technical composition. No class meetings; each student writes papers from ten to fifty pages in length under the individual direction of the instructor. The subjects are taken, as far as possible, from technical work previously done by the student outside of college, or from special research. *One thirty-minute conference a week. Preparation, 11-8.*
First term; repeated in second term. Two term hours. MR. GOTT

*11-13 **English.** Argumentative composition adapted to meet the special needs of engineers. *Three periods a week: two recitations and one ten-minute conference. Preparation, 11-2 or 12-2.*
First term. Three term hours. MR. SEAVEY and PROFESSOR EARLE

13-1 **French.** Elementary course. The essentials of grammar, with composition; Grandgent's Grammar; a French Reader; reading of short works of modern authors in prose and verse. Open to Freshmen whose entrance language is Latin, Greek, or Advanced German. It must be followed by 13-2 in the Sophomore year. *First term, five recitations a week; second term, four recitations a week.*

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*Open to students in the School of Liberal Arts as well as to students in the Engineering School.

First and second terms. Six term hours. MR. HILL

13-2 French. Reading of modern fiction, and scientific works related to the technical and scientific studies of the Freshman year. Review of grammatical principles; vocabulary practice. *Three recitations a week. Preparation, elementary entrance credit in French, or 13-1.*

First and second terms. Six term hours. MR. HILL

15-2 German. Review of grammatical principles, especially with reference to syntax. Reading of modern works, including one work dealing with a scientific subject. Dictation and composition. *Three recitations a week. Preparation 22-1 or Elementary German for admission.*

First and second terms. Six term hours. MR. HILL

[17-1 **Spanish.** Elementary course. The essentials of grammar; reading of modern prose; practice in writing Spanish. Open to those who have received a grade of C or higher in French 13-2, 13-3 or 13-4. All others wishing to elect the subject should consult the instructor. *Three recitations a week.*

First and second terms. Six term hours. ——— ———]

21 DRAWING

The department of Drawing aims to give a broad and exact training in the language of graphics; to teach the principles of its construction, its technique, and the art of expression by this medium. It is designed to give the student such practice as shall enable him to use this language with fluency whenever and wherever it may serve better than a written or spoken language. The work of the department also includes practice in the use of graphics for the solution of problems relating to the theory of mechanism and its application to machine design.

21-1 Drawing. The course in Freshman Drawing comprises exercises in the proper use and care of drafting tools; numerous problems in geometrical construction; a thorough study of the principles of orthographic projection, freehand and mechanical perspective, and isometric drawing. Considerable time is devoted to the freehand sketching of simple parts of machinery and the careful completion of drawings from these sketches. Throughout the course special attention is given to lettering and the composition of titles. *First term, three periods a week of three hours each, and two periods a week of two hours each.*

First term. Five term hours. ASSISTANT PROFESSOR ASHLEY

21-5 Descriptive Geometry. A course comprising the study of principles and their applications, by the solution of a large number of graded problems in which theory and practice are correlated. *Three periods a week; two hours each.* ASSISTANT PROFESSOR ASHLEY
Second term. Three term hours.

21-8 Drawing. A study of the technique of graphic expression and its application in giving complete and accurate information to the constructor. Detailed and assembly drawings are made from freehand sketches and other data, but nothing in the nature of a copy is permitted. The work is conducted according to the methods of progressive draftsmen, the greatest emphasis being laid on completeness and accuracy in the use of graphic language. *Three periods a week; two hours each. Preparation, 21-1.*
First term. Three term hours. MR. SVENSEN

21-13 Mechanism. An introductory course, conducted mainly by graphical methods, and dealing with the fundamental laws governing the velocity ratio and paths of mechanical movements and their application to velocity diagrams, simple types of gearing, and other modes of transmission. *Three periods a week; two hours each. Preparation, 21-1.*
Second term. Three term hours. ASSISTANT PROFESSOR ASHLEY

25 MECHANIC ARTS

Work in the shops is designed to give a practical knowledge of mechanical processes and of the materials of construction. By means of lectures, practical illustrations, actual work in the shops and visits to manufacturing plants the student comes in contact with the most approved methods and processes in engineering practice. In the shops a series of graded exercises is given, having in view the formation of habits of precision and the development of judgment essential to the engineer.

During the Senior year the knowledge of shop methods already gained is put to actual test in the development of Shop Problems which are carried on under "Production Engineering." The student investigates shop conditions in certain plants as to economical and practical methods of production. It is intended that work in the shop shall always maintain a close relation with the courses in drawing and design, much of the work in design being carried to completion in the shop, from drawings prepared in the drafting-room.

25-1 **Pattern Making.** Practice is given in the use of bench woodworking tools and the wood-turning lathe for the construction of simple patterns from working drawings. A set of graded exercises leads from simple to the more complicated patterns and core boxes. The methods and principles of foundry practice are introduced in the early part of the course. Much time is spent in the study of working drawings to develop the student's ability to apply the best pattern making and foundry practice, and to understand their relation to shop and drafting room. Visits are made to the shops of large manufacturing plants. *Three periods per week; two three-hour, one two-hour, and one lecture.*

Second term. Three term hours. MR. ADAMS

25-8 **Metal Work.** This course is introduced by work at the forge in bending, drawing, upsetting, welding, tool-dressing, etc., followed by work at the vice in chipping, filing, and fitting. Lathe work, including straight and taper turning, chucking, boring, reaming, and thread cutting; also drilling, planing, shaper and milling-machine work. *Three periods per week; three hours each.*

First term. Three term hours. MR. ADAMS

29 MATHEMATICS

The instruction in mathematics is arranged so that fundamental principles of trigonometry, analytics, and calculus may come as early as possible in the course, the more advanced parts of each subject being introduced later. A review of algebra runs through the first year in appropriate connection with topics in the other subjects. The prescribed work continues to the end of the Sophomore year, double time being given to mathematics in the first term of the Freshman year. Seniors and Juniors may elect higher courses in the School of Liberal Arts.

29-1 **Computation.** Right and oblique triangles, plane and spherical, and vector sums. Trigonometric equations and identities. Arrangement of computations rounding-off processes, use of logarithms and slide rules. Solution of equations by successive approximations. *Three periods a week; two hours each. Simultaneous with 29-2.*

First term. Three term hours.
PROFESSOR RANSOM and MR. DILLINGHAM

29-2 **Analytical Geometry and Algebra.** Co-ordinate systems, straight lines, circles and conic sections. Simultaneous equations, quadratics, variation. Tangents, loci, parameters, lines, planes, and surfaces in space. *Three hours a week. Simultaneous with 29-1.*

First term. Three term hours.
PROFESSOR RANSOM and MR. DILLINGHAM

29-3 **Freshman Calculus.** Fundamental principles. Algebraic differentials and integrals. Differential and integral rate problems. Maxima and minima. Transcendental functions. Areas. *Three hours a week. Preparation, 29-1 and 29-2.*

Second term. Three term hours.

PROFESSOR RANSOM and MR. DILLINGHAM

29-4 **Sophomore Calculus.** Differentiation and Integration. Summation problems. Use of tables. Centroids and Moments. *Three hours a week. Preparation, 29-3.*

First term. Three term hours.

PROFESSOR RANSOM and MR. DILLINGHAM

29-5 **Sophomore Calculus.** Approximate integration. Multiple integrals. Taylor's Theorem, and errors. Elements of Differential Equations. *Three hours a week. Preparation, 29-4.*

Second term. Three term hours.

PROFESSOR RANSOM and MR. DILLINGHAM

31 PHYSICS

The instruction in General Physics extends through the second term of the first year and the first term of the second year, and is common to all Courses in the Engineering School. It is the purpose of the course to lay a thorough foundation for the subsequent study of theoretical, experimental and technical Physics. The fundamental principles of the subject are developed in a course of illustrated lectures and recitations. Considerable attention is paid to the application of these principles to the solution of problems.

At the beginning of the second year the student enters the Physical Laboratory, where the work performed is, from the beginning, exclusively quantitative. It is designed to teach the student to make accurate measurements, to impart training in the manipulation of instruments employed in physical investigation, and to give practice in properly recording and interpreting experimental data. At the same time it leads to a better understanding of the principles of Physics, with which the student has already become acquainted in the lecture and recitation room.

31-1 Mechanics and Sound. The subjects considered are static and kinetic equilibrium, laws of motion, the energy principle, the simple types of motion including uniform and uniformly accelerated motion, rotation about a fixed axis, simple harmonic motion, and wave motion and resonance. *One lecture and two recitations per week. Preparation, 29-1 and 29-2.*

Second term. Three term hours.

ASSISTANT PROFESSOR MARVIN, MR. POTE, and MR. KNIGHT

***31-2 Electricity, Heat, Optics.** Static electricity, the condenser, the electric current, Ohm's law and applications, power, magnetism, the magnetic circuit, electromagnetic induction, alternating current, the principle of direct and alternating current machines and instruments. Heat, expansion, change of state, sources, uses, heat engines. Sources of light, velocity, Huyghen's Principle, reflection, refraction, color, diffraction, interference, polarization, optical instruments. *One lecture and two recitations per week. Preparation, 29-3, 31-1.*

First term. Three term hours.

ASSISTANT PROFESSOR MARVIN, MR. POTE, and MR. KNIGHT

31-7. Physical Laboratory. The earlier experiments relate to the mechanics of solids, liquids and gases. These are followed by experiments in electricity, including the measurement of currents, resistances and potentials. The experiments in heat include thermometry, expansion, latent heat and mechanical equivalent. The experiments in optics include photometry, mirrors and lenses, indices of refraction, elementary spectrum analysis, the telescope and microscope. The use of the various instruments of precision, and of graphical methods of interpreting data, is taught, so far as may be, in connection with these experiments. *One period of three hours, with one and one-half hours preparation, weekly. Preparation, 31-1; 31-2 simultaneously.*

First and second terms. Three term hours.

ASSISTANT PROFESSOR MARVIN, MR. POTE, and MR. KNIGHT

35 CHEMISTRY

35-1 General Inorganic Chemistry. An introductory course in theoretical and descriptive inorganic chemistry, with a thorough consideration of the simplest carbon compounds and principal technical processes. *Three periods a week, two lectures, one three hour laboratory period with conferences.*

First and second terms. Six term hours.

PROFESSOR DURKEE, ASSISTANT PROFESSOR COBB, MR. BAKER and ASSISTANTS

35-2 Qualitative Analysis for the detection of the metals, a course which includes the experimental development of schemes for the division of the metals into groups, the separation and detection of the metals in each group, — a study of all the chemical changes and analytical details, together with the correct analysis of six known solutions and thirteen unknown. *Two periods a week ; three hours each ; laboratory work and conference. Six lectures.*

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* Temporary arrangement for 1912–1913.

First term. Two term hours. PROFESSOR DURKEE, and ASSISTANTS

35-3 **Qualitative Analysis, Advanced,** dealing with methods to effect solution of solids, the detection of mineral and common organic acids, the complete analysis of inorganic solids, including mixtures of salts, minerals, alloys, and slags. Three known and thirteen unknown are required, and thorough study of the chemical changes and conditions involved in the analyses. *Two periods a week ; three hours each ; laboratory work and conference.*

Second term. Two term hours. MR. BAKER

35-4 **Quantitative Analysis.** Theory and practice of gravimetric and volumetric analysis, including the determination of chlorine by the ordinary and Gooch crucible methods, iron and sulphur in furous ammonium sulphate, silica in a silicate, phosphorus in a phosphate, complete analysis of dolomite, and brass, preparation of strictly half-normal sodium hydroxide and hydrochloric acid solutions, the volumetric analyses of soda ash and oxalic acid, the analysis of iron ore by the dichromate and permanganate methods, determination of chromium in chromite, of antimony by the iodine method, and silver by the sulphocyanate method. *Three periods a week ; three hours each ; laboratory work and conference.*

First and second terms. Six term hours. PROFESSOR DURKEE

35-5 **Quantitative Analysis.** Technical. Work varied somewhat to meet the needs of individual students. Course ordinarily comprises proximate analysis of coal, nitrogen in coal, by Kjeldahl's method, complete analysis of boiler scale, mineral and sanitary analysis of water, determination of copper in ores by iodine and cyanide methods, of zinc by ferro-cyanide method, complete analysis of Babbitt metal, determination of lead in ores, and manganese, sulphur, phosphorus, silicon and carbon in iron and steel. *Three periods a week ; three hours each ; laboratory work and conference.*

First and second terms. Six term hours. PROFESSOR DURKEE

35-7 **Fire Assay:** A course which deals with the theory and practice of sampling and assaying gold and silver ores. *Two periods a week ; three hours each ; laboratory work and conference.*

Second term. Two term hours. PROFESSOR DURKEE

35-8 **Metallurgy of Iron and Steel.** Considered largely from the chemical side, and includes the study of ores, fluxes, fuels, furnaces, and the other mechanical devices used in the commercial production of pig iron, wrought iron, and steel, together with the solution theory of iron and steel, heat treatment of steel, and production of malleable cast iron. *Two periods a week ; one hour each ; lectures and recitations.*

Second term. Two term hours. MR. BAKER

35-9 **Technical Gas Analysis,** by the Orsat, Elliot, and Hempel systems. *One period a week, of three hours.*

First term. One term hour. PROFESSOR DURKEE and ASSISTANT

35-10 **Organic Chemistry.** This course consists of lectures, recitations, and laboratory work. It is intended to familiarize the student with the typical compounds of carbon and their more important derivatives. The work in the laboratory includes the preparation of certain of the more important substances referred to in the lectures, and the identification of certain classes of compounds. *Four periods a week ; three lectures ; one three-hour laboratory period.*

First and second terms. Eight term hours.
ASSISTANT PROFESSOR COBB

35-11 **Theoretical Chemistry.** The subject matter of this course consists largely of the principles usually included under the head of Physical Chemistry. The work in the laboratory consists of physical chemical measurements and experiments of a physical chemical nature. *Three periods a week, two lectures, one three-hour laboratory period.*

First and second terms. Six term hours. ASSISTANT PROFESSOR COBB

35-17 **Applied Chemistry.** A course dealing with the most important applications of inorganic and organic chemistry to manufacturing purposes, such as the production of sulphuric acid, soda, illuminating gas, and sugar. *Three periods a week. Two lectures or recitations, and one three-hour laboratory period.*

First and second terms. Six term hours. PROFESSOR DURKEE

35-18 **Chemistry of Road-building Materials.** The origin, production, refining, and chemical analysis of tars, asphalts, petroleum and coal tar oils, Portland and other cements. The course is designed for advanced students in highway engineering, and should fit them for efficient service in cement laboratories and cement plants, and for testing the bituminous materials now so widely applied to road surfaces. *Two three-hour laboratory periods and one recitation per week. Preparation, 41-21, 35-1, and 35-2.*

First and second term. Six term hours. PROFESSOR DURKEE

35-99 **Chemical Engineering Thesis.** The development of a Chemical Engineering problem by extended personal research. The head of the department has authority to substitute another engineering subject for the thesis.

Second term. Three to five term hours.
PROFESSOR DURKEE and ASSISTANT PROFESSOR COBB

41 CIVIL ENGINEERING

41-3 **Surveying.** In this course each student obtains field practice with transit, level and plane table; also, an office drill in plotting and in surveying computations. The problems that are selected for both field and office are intended to illustrate general surveying principles and are considered to be well adapted to the needs of engineers in all courses. They include surveying problems that are incident to building construction and the installation of machinery, as well as problems that occur in ordinary surveys for topography and for area. Text-books; Theory and Practice of Surveying, by Johnson and Smith, and Topographical Drawing, by Daniels. *One three-hour period a week, first term; two three-hour periods a week, second term. Preparation, 29-1.*

First and second terms. Total, three term hours. MR. PAYROW

41-12 **Railroad Surveying.** The reconnoissance and preliminary survey of a proposed line of railroad; determination and location of curves that would be required; plotting of survey notes; computation of curves; estimates of materials for construction; completion of all drawings; final report on the advisability of the proposed line. Text books: Field Engineering, by Searles; Railroad Location, Surveys and Estimates, by Lavis. *Three periods a week; three hours each. Preparation, 41-3.*

First term. Three term hours. ASSISTANT PROFESSOR CONNER

41-13 **Railroad Engineering.** A comprehensive treatment of railroad curves and spirals; the study of trestles, culverts, tunnels, track elevation, repair shops, and miscellaneous railroad structures. *Three periods a week; one hour each. Preparation, 41-12.*

Second term. Three term hours. ASSISTANT PROFESSOR CONNER

41-14 **Railroad Engineering.** A recitation course comprising the study of track materials and track work, frogs and switches, yard and terminal layouts, signaling and interlocking, equipment and tools, and general railroad maintenance. The student is required to lay out and design a proposed siding. *Three periods a week; one hour each. Preparation, 41-13.*

First term. Three term hours. ASSISTANT PROFESSOR CONNER

41-17 **Railroad Engineering Economics.** Lectures and recitations on the economic principles of railroad location and operation include the general outline of procedure in financing railroad projects; discussions on grade and alignment revisions, double-tracking and general improvements. Text-book: Economics of Railroad Construction, by Webb.
Three periods a week; one hour each. Preparation, 41-14.

Second term. Three term hours. ASSISTANT PROFESSOR CONNER

41-21 **Highways and Cements.** The construction of modern paved streets; problems of road maintenance; tests of wearing and cementing qualities of trap rocks: abrasion test of paving brick; standard tests of Portland cements; proportioning of concrete; road-building properties of asphaltic oils, and other bituminous materials, their examination and application in recent practice. *One recitation and one three-hour laboratory period per week.*

Second term. Two term hours. MR. PAYROW

41-31 **Geodesy.** The determination of a true meridian by star and solar observations, accurate measurement of a base line, of angles in a triangulation system, and the adjustment of observations by the method of least squares. *Two periods a week; three hours each. Preparation, 41-3.*

First term. Two term hours. ASSISTANT PROFESSOR CONNER

41-40 **Hydraulics.** Theoretical and Applied, including the laws that relate to the pressure and flow of water in pipes, the discharge through weirs, tubes, and canals, together with a treatment of the elementary principles of water turbines. Text book: A Treatise on Hydraulics, by Merriman. *Three periods a week; one hour each.*

First term; repeated in second term. Three term hours.

PROFESSOR SANBORN

41-43 **Hydraulic Measurements.** Experiments on contracted and submerged weirs, standard nozzles, proportional water meter, impulse water wheel, duplex pump, and centrifugal pump; river and canal gaugings by rod floats, and current meter. Text book: A treatise on Hydraulics, by Merriman. *Two periods a week; three hours each. Preparation, 41-40.*

Second term. Two term hours. PROFESSOR SANBORN

41-46 **Water Supplies.** The examination of water supplies, quality of water, communicable diseases, purification of water, water supplies, reservoirs, dams, pumping machinery. Textbook; Public Water Supplies by Turneaure and Russell. *Three periods a week; one hour each. Preparation, 41-40.*

First term. Three term hours. PROFESSOR SANBORN

41-47 **Water Power Engineering.** Water shed areas, stream flow, hydraulics of water wheels and turbines, turbine testing, selection of turbine for given conditions, water-power development and value of privileges. Text book: Water Power Engineering, by Mead. *Three periods a week; one hour each. Preparation, 41-40.*

First term. Three term hours. PROFESSOR SANBORN

41-48 **Sewerage.** Purification of sewage, the design of a sewerage system, forms of construction, modern methods of sewage and garbage disposal. Text-book: Sewerage by Fowell. *Three periods a week; two hours each. Preparation, 41-46.*

Second term. Three term hours. ASSISTANT PROFESSOR CONNER

41-51 Fire Protection Engineering. Fire streams, fire pumps, meters, pipe systems, including automatic sprinklers, watchman service, public fire departments, fire causes, and fire proof and slow burning construction. Text book: Fire Protection, by Crosby and Fiske. *Two periods a week; two hours each. Preparation, 41-40.*

Second term. Two term hours. PROFESSOR SANBORN

41-63 Contracts. The essential elements of all contracts, their formation and modes of discharge, the fundamental principles of successful writing and interpretation of contracts for the erection of engineering works, are carefully considered. Commercial contracts are also studied, including contracts of association, of sale, of transportation, and instruments of credit. The duties and legal responsibilities of the engineer as agent, business man, or independent contractor are emphasized, and some practice is had in writing engineering contracts and specifications. *Three periods a week; one hour each.*

Second term. Three term hours. ASSISTANT PROFESSOR CONNER

41-95 Civil Engineering Topics. Presentation and discussion of engineering topics. Text book: Proceedings of the American Society for Civil Engineers for the present year. *Two periods a week; one hour each. Preparation, Junior Civil Engineering courses.*

First term. Two term hours. PROFESSOR SANBORN

41-99 Civil Engineering Thesis. A single topic is developed by extended research, design, or experimentation. The head of the department has authority to substitute another engineering subject for the thesis.

Second term. Three to five term hours.

PROFESSOR SANBORN and ASSISTANT PROFESSOR CONNER

45 APPLIED MECHANICS

45-1 Applied Mechanics. This is a consideration of the principles of the strength of materials, relating to beams, columns and shafts, and is essentially a mathematical treatment. In the development, the following subjects are treated in detail: centre of gravity; moment of inertia; the laws of elasticity; coefficients of elasticity; relations between stress and strain; pure stresses, as tension, compression, and shear; elastic limits, working stresses and ultimate resistances of wrought iron, steel, timber, and concrete; reactions and bending moments of beams; bending moment and shear diagrams; theory of flexure. It includes also the design and construction of steel and timber beams, columns, and shafts, and the design of plate girders. *Three periods a week; recitations and lectures with numerous problems. Preparation, 29-5 and 45-21.*

First term. Three term hours. PROFESSOR ROCKWELL and MR. SMITH

45-2 Applied Mechanics. The stresses in simple framed structures, including an introduction to the methods of graphic statics, and a brief treatment of the principles of mechanics involved in masonry design concrete construction are given. *Three periods a week; recitations and lectures with problems. Preparation, 45-1.*

Second term. Three term hours. PROFESSOR ROCKWELL and MR. SMITH

45-3 **Structural Mechanics.** A treatment of the mechanics of masonry structures, including the design of retaining walls, abutments, masonry arches, chimneys, dams, and masonry foundations.
reinforced concrete structures. *Three periods a week; recitations and lectures with problems and designs. Preparation, 45-2.*

First term. Three term hours. PROFESSOR ROCKWELL

45-12 **Applied Mechanics Laboratory.** This course deals with the resistance of the materials of construction, and comprises the testing of cast iron, steel, wrought iron, timber, and concrete in tension, compression, and shear, and the determination of the elastic limits, ultimate strengths, and coefficients of elasticity of these materials. *One period a week; two hours. Simultaneous with 45-1.*

First term. One term hour. MR. SMITH

45-21. **Mechanics.** A course in the fundamental principles of general mechanics with numerous applications to engineering problems. Forces, motion, dynamics, work and energy, and friction. *Three periods a week; Preparation, 31-1.*

Second Term. Three term hours.

PROFESSOR ROCKWELL and ASSISTANTS

47 STRUCTURAL ENGINEERING

47-1 **Roofs and Bridges.** A study of the different methods, algebraic and graphical, for the determination of stresses in simple framed structures. A large part of the course is devoted to the stresses in bridge trusses in use at the present time, such as the Pratt, Warren, and Baltimore trusses with parallel chords, and modifications of these, with curved chords. Some attention is also given to forms that have been used in the past, as the Whipple and lattice trusses. The fundamental principles of influence lines are developed and applied to the simpler forms of trusses. *Three periods a week; lectures and recitations, with problems. Preparation, 45-2.*

First term. Three term hours. PROFESSOR ROCKWELL

47-2 **Theory of Structures.** An advanced course in the theory and design of structures. The method of influence lines is used to a considerable extent in addition to the usual algebraic methods. *Three periods a week; lectures aud recitations, with problems. Preparation, 47-1 and 45-3.*

Second term. Three term hours. PROFESSOR ROCKWELL

47-3 **Structural Design.** An introductory course in the design of framed structures. It consists of (*a*) the critical examination of and report on some existing structure and (*b*) the design and detail drawings of a plate girder bridge, and a steel roof truss. *Three periods a week; three hours each. Simultaneous with 45-2.*

Second term. Three term hours.

PROFESSOR ROCKWELL and MR. SMITH

47-7 **Bridge Design.** A course in the design of riveted and pin connected steel bridges. It consists of (*a*) one complete design of a typical bridge, including a critical study of the important details, carried on under the guidance of the instructor, and then (*b*) each student is given a different set of data from which he is required to make an independent design and general drawing. *Three periods a week; three hours each. Preparation, 47-3. Simultaneous with 47-1.*

First term. Three term hours. PROFESSOR ROCKWELL and MR. SMITH

47-8 **Structural Design.** The design of masonry and reinforced concrete structures. *Two periods a week; three hours each. Preparation, 45-3.*

Second term. Two term hours. PROFESSOR ROCKWELL and MR. SMITH

47-95 **Structural Topics and Reports.** Reports by each student on assigned reading in engineering literature, and on the stability and safety of structures, based on a personal examination by the student. The presentation is by lecture, but a written copy of each report must be left with the department. *Two periods a week; one hour each. Preparation, credit in required work of the Junior year.*

First term. Two term hours. PROFESSOR ROCKWELL and MR. SMITH

47-99 **Structural Engineering Thesis.** A single topic is developed by extended research, design, or experimentation.

Second term. Three to five term hours. PROFESSOR ROCKWELL

51 MECHANICAL ENGINEERING

51-1 **Steam Engine.** This course deals with the generation of steam and its use in the steam engine. It comprises a study of modern types of boilers and their auxiliary apparatus, simple and compound engines, both condensing and non-condensing; a discussion of the elementary principles of thermodynamics and of the use of the indicator in steam engine practice. Some attention is given to the production of gas for power purposes and its use in the gas engine. *Three periods a week; one hour each. Preparation, 21-13 and 29-3.*

First term. Three term hours. PROFESSOR CHASE

51-3 **Thermodynamics.** This course is devoted to the thermodynamics of the steam engine and other heat engines, and includes a study of the

properties of steam, gas and air as used in steam engines, turbines, gas engines, air compressors and blowers; also the working fluids and saturated vapors used in refrigeration. The object of the course is to teach the principles, and their application to practical problems. *Three periods a week; one hour each. Preparation, 29-5 and 51-1.*
Second term. Three term hours. PROFESSOR CHASE

51-7 **Engine Design.** The design of the steam turbine, steam engine and gas engine, involving the strength and proportion of parts and including the layout of the valve gear of high speed engines, the Corliss gear and locomotive valve gears. *Three periods a week; two hours each. Preparation, 51-3, and simultaneous with 51-15.*
First term. Three term hours. PROFESSOR CHASE

51-8 **Power Plant Design.** A study of steam and gas power plant equipment. Boiler design, including calculations for one type of boiler. Pumps, heaters, condensers; arrangement of piping; chimneys, mechanical draft; mechanical stoking, coal handling. *Three periods a week; two hours each.*
Second term. Three term hours. PROFESSOR CHASE

51-11 **Mechanical Engineering Problems.** The solution and class room discussion of simple problems in mechanical engineering requiring calculation, design and the exercise of judgment. A large number of problems from practice are presented in the form commonly met by the young engineer. Special emphasis is put on the presentation of results. *Two periods a week; one hour each. Preparation, 51-1 and 51-13.*
First term. Two term hours. MR. SVENSEN

51-13 **Mechanics of Machinery.** The determination of the efficiency of machines, the frictional resistance and the forces acting through the several parts. Transmission by belting, ropes, gears, friction drive, and clutches. Analytical and graphic methods are used in the solution of a large number of practical problems. *Three periods a week; one hour each. Preparation, 21-13 and 45-1.*
Second term. Three term hours. PROFESSOR ANTHONY

51-15 **Dynamics of Machinery.** A graphical and analytical consideration of the transmission of energy in machines. The construction of inertia curves and crank effort diagrams applied to the solution of problems relating to fluctuations in speed, flywheels, balancing of moving parts and regulation by governors. *Three periods a week; one hour each. Preparation, 51-13.*
First term. Three term hours. PROFESSOR CHASE

51-17 **Machine Design.** An application of the principles of mechanism and mechanics to the solution of definite problems in the design of a representative type of machine. A systematic training of the judgment is an important part of this course. *Three periods a week; three hours each. Preparation, 45-2 and 51-13.*

First term. Three term hours. PROFESSOR ANTHONY

51-19 Production Engineering. A study of the efficiency of machine tools, the design and construction of special tools for the manufacture of machinery, the investigation of shop conditions and practice for the economical production of machine parts. *Three periods a week; three hours each. Preparation, 25-8.*

Second term. Three term hours. ASSISTANT PROFESSOR STEWART

51-21 Mechanical Engineering Laboratory. Efficiency of simple machines; screw threads; hoists, simple, duplex, triplex; rope and belt friction; transmission of power by belts. The determination of the clearance of engines; valve setting on plain slide valve, riding cutoff, and Corliss engines. Gage testing; the adjustment and use of indicators; testing indicator springs; the use of several types of steam calorimeters; injector test; flow of steam through orifices. The results of all laboratory work are submitted in the form of carefully written reports. *Two periods a week; three hours each. Preparation, 51-1.*

Second term. Two term hours. PROFESSOR CHASE and MR. SVENSEN

51-27 Mechanical Engineering Laboratory. Tests on riding cut-off, shaft governor and Corliss engines; a 16x8½x9 duplex pump; measurement of water by weir, nozzle and meter; condenser tests; analysis of flue gases; tests of a 125-H.P. return tubular boiler; co-efficients of friction of oils and friction on different types of bearings; tests on a 35-inch exhaust fan, a 15-K.W. steam turbine and an air compressor; plant test at a 2000-K.W. power station. *Three periods a week; three hours each; three hours outside work. Preparation, 51-21.*

Second term. Four term hours. PROFESSOR CHASE and MR. SVENSEN

51-31 Mechanical Engineering Laboratory. (Gas Engine Practice and Design.) A study of internal combustion engines based on theory and practical operation. The various types of gas, gasolene, and oil engines, with particular attention to governing, valve timing, carburetion, and ignition; tests of automobile, marine, stationary and producer types. Textbook: Carpenter and Diederichs, "Internal Combustion Engines." *Three periods a week; three hours each. Preparation, 51-3 and 51-21.*

First term. Three term hours. ASSISTANT PROFESSOR STEWART

51-95 Mechanical Engineering Topics. A course of lectures by students. Each member of the course chooses three topics from the proceedings of the American Society of Mechanical Engineers. The subjects are presented to the class in the form of lectures, followed by dis-

cussion and criticism. *Two periods a week. Preparation, Junior Mechanical Engineering courses.*
First term. Two term hours. PROFESSOR ANTHONY

51-99. Mechanical Engineering Thesis. An essay based on extended personal research, design, or experimentation. The head of the department has authority to substitute another engineering subject for the thesis.
Second term. Three to five term hours.
PROFESSORS ANTHONY AND CHASE

54 GEOLOGY

The subjects offered in the department of Geology do not form a sequence, but are intended to give different classes of students that knowledge of geology and mineralogy which they need. In all cases, they aim to include some real grasp upon the structure and history of the earth, the problems presented in the study thereof, and the modes of attack upon those problems. The first subject (Geology 1) is introductory, open to all, and intended primarily for those who have had no previous work in science. The other subjects are such that certain preliminary studies, stated in connection with each, must be taken before entering upon them.

The illustrative collections in these lines are ample. Besides exhibition specimens in the Barnum Museum, there is a working collection illustrating mineralogy, lithology, and dynamical and historical geology. These are supplemented with maps, diagrams, photographs, and lantern slides. The work in each subject consists of lectures and recitations, together with work in the laboratory and in the field. Excursions are taken to neighboring points that illustrate certain phenomena. Tufts College is well placed for field work and for the study of various natural processes.

[54-1 **Physical Geology and Geography.** Lectures and recitations; laboratory and field work.. Mainly for those intending to teach.
Second term. Three term hours. PROFESSOR LANE]

54-3 **Mathematical Problems presented to Geologists.** Conferences and critical reading of selected papers and original work.
First and second terms. Six term hours. PROFESSOR LANE

[54-4 **Field Geology.** *One recitation and six hours field work a week. Preparation, 54-2.*

First part of first and last part of second term. Three term hours.

PROFESSOR LANE]

54-21 **Physical Geography and Meteorology.**
First term. One term hour. PROFESSOR LANE

54-22 **Physical Geology.**
First term. Two term hours. PROFESSOR LANE

54-23 **Economic Geology.**
Second term. One term hour. PROFESSOR LANE

54-24 **Historical Geology.**
Second term. Two term hours. PROFESSOR LANE

61 ELECTRICAL ENGINEERING

The aim of the work in this department is to fit men to deal intelligently with electrical problems likely to be presented to the practical engineer. With this in view, principles rather than details are emphasized, and these principles are developed and fixed by the free use of concrete problems as well as by laboratory experiments and tests.

61-3 **Dynamo Electric Machinery.** An elementary course dealing with the fundamental principles of dynamo electric machinery and their application in the construction and operation of generators and motors. Some attention is also given to storage batteries, arc and incandescent lamps and systems of direct-current distribution. *Three periods a week; one hour each. Preparation, 31-2 and 45-21.*

First term. Three term hours. PROFESSOR HOOPER

61-4 **Electrical Laboratory.** Electrical measurements and testing, including, in addition to the more common measurements, calibration of instruments, study of arc and incandescent lamps, and direct current dynamos. *Three periods a week; three hours each; three hours outside work. Preparation, 61-3.*

Second term. Four term hours.

ASSISTANT PROFESSOR ROLLINS and MR. MUNRO

61-5 **Alternating Current Machinery.** A course treating of the theory, construction, and operation of synchronous machinery. *Three periods a week; one hour each. Preparation, 61-3.*

Second term. Three term hours. PROFESSOR HOOPER

61-7 Dynamo Laboratory. Advanced, direct, and alternating dynamo testing. *Three periods a week ; three hours each ; three hours outside work. Preparation, 61-1 and 61-3. Simultaneous with 61-15 and 61-16.*

First term. Four term hours.

ASSISTANT PROFESSOR ROLLINS AND MR. MUNRO

61-10 Electrical Laboratory. For students in engineering courses other than Electrical. Measurements, tests, and descriptive matter selected with special reference to the needs of those who have but little opportunity for electing subjects in Electrical Engineering. *Three periods per week ; two hours each. Preparation 61-3.*

Second term. Two term hours. ASSISTANT PROFESSOR ROLLINS

61-11 Alternating Currents. The mathematical development of equations and formulas from elementary electrical principles, and the physical interpretation of the equations and formulas thus developed. *Three periods a week;one hour each. Preparation, 31-2, 45-21, and 29-5.*

First term. Three term hours. PROFESSOR HOOPER

61-15 Electrical Engineering. A course dealing with the production, transmission, distribution, and utilization of electrical power. *Three recitations a week, with solution of assigned problems. Preparation, 61-5.*

First term. Three term hours. PROFESSOR HOOPER

61-16 Electrical Engineering. A continuation of 61-15. *Three periods a week; one hour each. Preparation, 61-15.*

Second term. Three term hours. PROFESSOR HOOPER

61-17 Telephone and Telegraph. A course on principles and operation of telephone and telegraph systems. *Three periods a week. Preparation, 31-3 and 61-4.*

First term. Three term hours. ASSISTANT PROFESSOR ROLLINS

61-21 Dynamo Design, D.C. A course on the design of direct-current machinery. *Three periods a week ; two hours each. Preparation, 61-5.*

First term. Three term hours. MR. MUNRO

61-22 Dynamo Design, A.C. A course in the design of alternating current apparatus. *Three periods a week ; two hours each. Preparation, 61-5 and 61-21.*

Second term. Three term hours. MR. MUNRO

61-95 Electrical Topics. Lectures by students on electrical subjects, followed by discussion and criticism. *Three periods a week. Preparation, 61-15.*

Second term. Three term hours. PROFESSOR HOOPER

61-99 Thesis. An essay based on some construction, design, or investigation. The head of the department has authority to substitute another engineering subject for the thesis.

Second term. Three to five term hours.

PROFESSOR HOOPER, ASSISTANT PROFESSOR ROLLINS and MR. MUNRO

64 MINERALOGY

64-1 Mineralogy and Lithology. *Two recitations and four hours laboratory work a week. Preparation, 35-1.*
First term. Three term hours. PROFESSOR LANE

64-1 Mineralogy alone is of use to civil and structural engineers, but those who are looking to mining or chemical engineering should also take 64-2.

[**64-2 Crystallography and Optical Mineralogy.** *Two lectures and four hours laboratory work a week. Preparation, 64-1.*
Second term. Three term hours. PROFESSOR LANE]

66 and 81 POLITICAL ECONOMY

81-2 Elements of Economics. Designed especially for students of engineering; aims at a comprehensive study of the elements of economics, with special reference to present day economic and social problems. Text book (Taussig, Principles of Economics), lectures, tests. *Three recitations a week.*
First and second terms. Six term hours. PROFESSOR METCALF

66-5 Money, Credit, and Banking. An historical course, with special reference to the financial experience of the United States. Leading topics are Hamilton's financial system; protection and revenue tariffs; the bank question; the fiscal policy of the Civil War; resumption of specie payments; the national banking system; State and local taxation; silver legislation and the panic of 1893; government loans; present currency problems. Dewey's Financial History of the United States is used as a guide. *Three recitations a week. Preparation, 81-1.*
Second term. Three term hours. PROFESSOR METCALF

66-16 Modern Labor Problems. This subject deals mainly with the social and economic problems arising from the relations of employers and their laborers. The chief topics will be the government and policies of trade unions, methods of industrial remuneration, methods of industrial harmony, the relations of organized labor to child, woman and prison labor, unemployment and vocational training. Carlton's History and Problems of Organized Labor will be used as a guide. *Lectures and recitations. Three recitations a week Preparation, 81-2.*
Second term. Three term hours. PROFESSOR METCALF

66-17 Modern Industrial Organization and Management. Brief survey of the evolution of modern capitalism; plant equipment; the concentration and integration of modern business; defects of the present industrial order; types of business administration and management; the principles of scientific management and their universal application; what employer, employee, consumer, and trade unions gain through the economies of scientific management. *Lectures, discussions, and theses.*
First term. Three term hours. PROFESSOR METCALF

TABULAR PROGRAM
FOR
ENGINEERING SCHOOL
1912-1913

TABULAR PROGRAM, **FIRST** HALF-YEAR 1912–13

The suffixed *a*, *b*, *c*, *d*, signify divisions

MONDAY

	1	2	3	4	5	6	7	8
SENIOR	35-17 47-7 61-7	35-17 47-7 51-7 61-7	35-17 47-7 51-7 61-7	41-47 61-11	35-11 41-14 51-11 61-15	51-17 61-21	51-17 61-21	
JUNIOR	25-8*b* 35-2*a* 41-12*b*	25-8*b* 35-2*a* 41-12*b*	25-8*b* 35-2*a* 41-12*b*	45-1*a* 51-1*b*	45-1*b* 51-1*a*	35-2*b* 41-12*a*	35-2*b* 41-12*a*	35-2*b* 41-12*a*
SOPH		21-8*a*	21-8*a*	31-2	29-4*ab*	21-8*b*	21-8*b*	
FRESH	21-1*a*	21-1*a* 29-1*b*	21-1*a* 29-1*b*	11-1	13-1	21-1*b* 29-1*a*	21-1*b* 29-1*a*	

WEDNESDAY

	1	2	3	4	5	6	7	8
SENIOR	35-11 47-7 61-7	35-11 47-7 51-7 61-7	35-11 47-7 51-7 61-7	41-47 61-11	41-14 51-11 61-15	51-17 61-21	35-17 51-17 61-21	
JUNIOR	25-8*b* 35-10 41-12*b*	25-8*b* 35-10 41-12*b*	25-8*b* 35-10 41-12*b*	45-1*a* 51-1*b*	45-1*b* 51-1*a*	41-12*a*	41-12*a*	41-12*a*
SOPH	41-3*c*	21-8*a* 41-3c	21-8*a* 41-3*c*	31-2	29-4*ab*	21-8*b*	21-8*b*	
FRESH	21-1*a*	21-1*a* 29-1*b*	21-1*a* 29-1*b*	11-1	13-1	29-1*a*	29-1*a*	

FRIDAY

	1	2	3	4	5	6	7	8
SENIOR	35-9 47-7 61-7	35-9 47-7 51-7 61-7	35-9 47-7 51-7 61-7	41-47 61-11	35-11 41-14 61-15	51-17 61-21	35-17 51-17 61-21	
JUNIOR	25-8*b* 35-2*a* 41-12*b*	25-8*b* 35-2*a* 41-12*b*	25-8*b* 35-2*a* 41-12*b*	45-1*a* 51-1*b*	45-1*b* 51-1*a*	35-2*b* 41-12*a*	35-2*b* 41-12*a*	35-2*b* 41-12*a*
SOPH	41-3*d*	21-8*a* 41-3*d*	21-8*a* 41-3*d*	31-2	29-4*ab*	21-8*b*	21-8*b*	
FRESH	21-1*a*	21-1*a* 29-1*b*	21-1*a* 29-1*b*	11-1	13-1	21-1*b* 29-1*a*	21-1*b* 29-1*a*	

TABULAR PROGRAM, **FIRST** HALF-YEAR 1912-13

The suffixed *a, b, c, d,* signify divisions

TUESDAY

	1	2	3	4	5	6	7	8
Senior	35-5 51-31	35-5 41-46 51-31	35-5 47-95 51-31 61-17	45-3 51-15	41-95 66-17	41-31	41-31	41-31
Junior	25-8*a* 35-4	25-8*a* 35-4 45-12*c*	25-8*a* 35-4 41-40 45-12*c*	81-2	35-10 61-3	45-12*a*	45-12*a*	
Soph	35-1*b*	35-1*b* 11-13*a*	35-1*b* 11-13*b*	11-5	35-1*ab*	31-7*b* 41-3*a*	31-7*b* 41-3*a*	31-7*b* 41-3*a*
Fresh	21-1*b*	15-2 21-1*b*	21-1*b* 29-2*a*	13-2*a* 29-2*b*	13-2*b* 29-2*cd*	21-1*a*	21-1*a*	

THURSDAY

Senior	35-5 51-31	35-5 41-46 51-31	35-5 47-95 51-31 61-17	45-3 51-15	41-95 66-17	41-31	41-31	41-3
Junior	25-8*a* 35-4	25-8*a* 35-4	25-8 *a* 35-4 41-40	81-2	35-10 61-3	45-12*b*	45-12*b*	
Soph	35-1*a* 41-3*e*	35-1*a* 41-3*e*	11-7 35-1*a* 41-3*e*	11-5	35-1*ab*	31-7*a* 41-3*b*	31-7*a* 41-3*b*	31-7*a* 41-3*b*
Fresh	21-1*b*	15-2 21-1*b*	21-1*b* 29-2*a*	13-2*a* 29-2*b*	13-2*b* 29-2*cd*	21-1*a*	21-1*a*	

SATURDAY

Senior	35-5 51-31	35-5 41-46	35-5 61-17	45-3 51-15	66-17			
Junior	25-8*a* 35-4	25-8*a* 35-4	25-8*a* 35-4 41-40	81-2	35-10 61-3			
Soph		11-13*a*	11-7 11-13*b*	11-5				
Fresh	21-1*b*	15-2 21-1*b*	21-1*b* 29-2*a*	13-2*a* 29-2*b*	13-2*b* 29-2*cd*			

TABULAR PROGRAM, SECOND HALF-YEAR 1912–1913

The suffixed *a*, *b*, *c*, *d* signify divisions

MONDAY

	1	2	3	4	5	6	7	8
SENIOR	35-17 51-19	35-17 41-51 51-19	35-17 41-51 51-19	46-21 61-95	35-11 41-63	35-7 41-43*a* 51-27 61-22	35-7 41-43*a* 51-27 61-22	35-7 41-43*a* 51-27
JUNIOR	47-3 61-4*a*	47-3 61-4*a*	47-3 51-3 61-4*a*	41-13 45-2*a*	41-40 45-2*b*	35-3 61-10	35-3 61-10	35-3
SOPH	41-3*cd*	29-5*a* 41-3*cd*	11-6 41-3*cd*	21-13*a*	21-13*a* 29-5*b*	21-13*b* 31-7*b*	21-13*b* 31-7*b*	31-7*b*
FRESH	25-1*a*	21-5*b* 25-1*a*	21-5*b* 25-1*a*	11-2	31-1	15-2	13-2*b*	

WEDNESDAY

	1	2	3	4	5	6	7	8
SENIOR	35-11 51-19	35-11 41-51 51-19	35-11 41-51 51-19	35-8 46-21 61-95	41-63	51-27 61-22	51-27 61-22	51-27
JUNIOR	35-10 47-3 61-4*a*	35-10 47-3 61-4*a*	35-10 47-3 51-3 61-4*a*	41-13 45-2*a*	41-40 45- *b*	61-10	61-10	
SOPH	41-3*d*	29-5*a* 41-3*d*	11-6 41-3*d*	21-13*a*	21-13*a* 29-5*b*	21-13*b* 31-7*d*	21-13*b* 31-7*d*	31-7*d*
FRESH	25-1*a*	21-5*b* 25-1*a*	21-5*b* 25-1*a*	11-2	31-1	15-2	13-2*b*	

FRIDAY

	1	2	3	4	5	6	7	8
SENIOR	51-19	51-19	51-19	35-8 46-21 61-95	35-11 41-63	35-7 41-43*a* 51-27 61-22	35-7 41-43*a* 51-27 61-22	35-7 41-43*a* 51-27
JUNIOR	47-3 61-4*a*	47-3 61-4*a*	47-3 51-3 61-4*a*	41-13 45-2*a*	41-40 45-2*b*	35-3 61-10	35-3 61-10	35-3
SOPH	41-3*c*	29-5*a* 41-3*c*	11-6 41-3*c*	21-13*a*	21-13*a* 29-5*b*	21-13*b* 41-3*b*	21-13*b* 41-3*b*	41-3*b*
FRESH	25-1*a*	21-5*b* 25-1*a*	21-5*b* 25-1*a*	11-2	31-1	15-2	13-2*b*	

TABULAR PROGRAM, **SECOND** HALF-YEAR 1912–1913

The suffixed *a*, *b*, *c*, *d*, signify divisions

TUESDAY

	1	2	3	4	5	6	7	8
SENIOR	35-5 47-8 41-8	35-5 41-48 47-8 51-8	35-5 41-48 47-8 51-8	41-17 61-16	47-2 66-17	41-43*b*	41-43*b*	35-17 41-43*b*
JUNIOR	35-4 61-4*b*	35-4 61-4*b*	35-4 51-13 61-4*b*	81-2	35-10 61-5	41-21*a* 51-21	41-21*a* 51-21	41-21*a* 51-21
SOPH	35-1*b* 41-3*b*	11-4 35-1*b* 41-3*b*	35-1*b* 41-3*b*	45-21*abc*	35-1*ab*	31-7*c*	31-7*c*	31-7*c*
FRESH	25-1*b*	21-5*a* 25-1*b*	21-5*a*	13-2*a* 29-3*b*	13-1 29-3*ac*		Solid Gm.	

THURSDAY

SENIOR	35-5 47-8	35-5 41-48 47-8 51-8	35-5 41-48 47-8 51-8	41-17 61-16	47-2 66-17	41-43*b*	41-43*b*	35-17 41-43*b*
JUNIOR	35-4 61-4*b*	35-4 61-4*b*	35-4 51-13 61-4*b*	81-2	35-10 61-5	41-21*b* 51-21	41-21*b* 51-21	41-21*b* 51-21
SOPH	35-1*a* 41-3*a*	35-1*a* 41-3*a*	11-8 35-1*a* 41-3*a*	45-21*abc*	35-1*ab*	31-7*a*	31-7*a*	13-7*a*
FRESH	25-1*b*	21-5*a* 25-1*b*	21-5*a* 25-1*b*	13-2*a* 29-3*b*	13-1 29-3*ac*		Solid Gm.	

SATURDAY

SENIOR	35-5	35-5 41-48 51-8	35-5 41-48 51-8	41-17 61-16	35-10 47-2 66-17			
JUNIOR	35-4 61-4*b*	35-4 61-4*b*	35-4 51-13 61-4*b*	81-2	35-10 41-21*ab* 61-5			
SOPH	41-3*a*	11-4 41-3*a*	11-8 41-3*a*	45-21*abc*				
FRESH	25-1*b*	21-5*a* 25-1*b*	21-5*a* 21-5*b*	13-2*a* 29-3*b*	13-1 29-3*ac*			

THE GRADUATE SCHOOL

Faculty of the Graduate School

WILLIAM L. HOOPER, AM., PH.D., ACTING PRESIDENT

J. STERLING KINGSLEY, SC.D., DEAN
Professor of Biology

WILLIAM H. REED, JR., A.M., SECRETARY

CHARLES E. FAY, A.M., LITT.D.
Wade Professor of Modern Languages

WILLIAM L. HOOPER, A.M., PH.D.
Professor of Electrical Engineering

RICHARD JONES, PH.D.
Professor of English Literature

FRANK W. DURKEE, A.M.
Professor of Chemistry

GEORGE VAN NESS DEARBORN, A.M., PH.D., M.D.
Professor of Physiology

WILLIAM K. DENISON, A.M.
Professor of the Latin Language and Literature

HENRY C. METCALF, PH.D.
Jackson Professor of Political Science

CHARLES ST. CLAIR WADE, A.M.
Professor of the Greek Language and Literature

FRANK G. WREN, A.M.
Walker Professor of Mathematics

ALFRED W. BALCH, PH.G., M.D.
Assistant Professor of Medical Chemistry

ARTHUR I. ANDREWS, PH.D.
Professor of History

PHILIP H. COBB, PH.D.
Assistant Professor of Physical and Organic Chemistry

STANDING COMMITTEES OF THE GRADUATE SCHOOL

Executive: Professor Hooper, *Chairman;* Professors Denison and Wren.

Requirements for Degrees: Dean Kingsley, *Chairman;* Professors Metcalf and Fay.

The Graduate School

INSTRUCTION

Graduate instruction is given by members of the several existing faculties. The advanced elective work offered to undergraduates in any department of the School of Liberal Arts is open to graduate students, and will count for the degree of Master of Arts, on condition that it be not counted for any other degree.* Additional courses still more advanced may be arranged with the instructor in whose department the work is to be done.

DEGREES

The degrees offered are Master of Arts and Master of Science. Departments open to candidates for the Master's degree are:—

English
Modern Languages,
Ancient Languages,
History and Public Law,
Political Science,
Mathematics,
Chemistry,
Physiological Chemistry,
Biology,
Physiology,
Electricity.

The Degree of Master of Arts will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts, or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions:—

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one or at the most two departments. If two departments are chosen they should be allied, and should occupy the relation of major and subsidiary department.

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* Students doing work in undergraduate classes are required to take the appointed final examination with these classes.

2. This course shall be pursued during a residence of not less than one year. In the case of graduates of Tufts College, the condition of residence may be waived by special permission, but the degree cannot then be taken with less than two years of graduate study.

3. The candidate shall prepare a thesis in the form prescribed by the regulations, which may be ascertained at the Secretary's office, and shall pass a satisfactory examination under the supervision of a board of three examiners, appointed by the Graduate Faculty at its May meeting. The thesis must be presented at least one month before Commencement.

4. No subject counted for the first degree will be counted for the second degree.

5. Students taking the degree at the end of a four years' course of study must have complied with the requirement as to standing governing those who receive the degree of A.B. at the end of three years; that is, an average standing of Grade B, or higher, must have been attained on the entire work of the course.

6. Candidates for this degree must make a written application to the Graduate Faculty before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year of study they must also give a second notice three months before receiving the degree. This application shall indicate the department or departments in which it is proposed to pursue work for a degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similiar grade, must complete the requirement for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF MASTER OF SCIENCE will be conferred upon Bachelors of Science who shall satisfactorily pursue advanced professional study at Tufts College for one year, under the conditions required of candidates for the degree of Master of Arts; or upon Bachelors of Science of Tufts College who shall pursue graduate work *in absentia* for at least two years, or who shall present suitable evidence of three years of professional work, one year of which must be in a position of responsibility, in which case a certain amount of professional study will be assumed. A thesis based upon this study will be required.

DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF MASTER OF ARTS

[For detailed statements of the subjects referred to in the following pages, see "Departments of Instruction" in the announcement of the School of Liberal Arts.]

ENGLISH.—It is assumed that candidates for the degree of Master of Arts in English will have already laid a good foundation in English composition and the history of English literature. The amount of work expected is roughly indicated by that required of a major student in English at this College. When not anticipated in undergraduate work, the subjects numbered 7, 10, 14 to 21, 23 to 26, 28, 34, and 36 may be counted towards the Master's degree, provided that the work done distinctly surpasses in quality and quantity that required of undergraduates. On the other hand, a part of the work or the entire work for the advanced degree may consist of a special course of study, undertaken under the direction of the department. Such special work must be of creative or investigative order. It may take the form of discussion of some question in literary history or literary criticism. It may consist of the intensive study of an author or a period. The use of German and French is sometimes necessary. A final oral examination is customary.

MODERN LANGUAGES.—The undergraduate subjects at present offered in Modern Languages enable the candidate for the degree of Bachelor of Arts who specializes in this department to cover the work formerly required for the Master's degree. For those who have not taken the more advanced subjects, the department offers a full graduate course leading to the degree of Master of Arts. The work is performed in existing undergraduate classes. To enter upon this course, the candidate must have completed the equivalent of six of the Modern Language subjects, including 1 and 3 in both German and French. Of elementary subjects only Italian may be taken, by such as have had the equivalent of two years of French. Graduate students whose special work is being performed in other departments are admitted to such classes in German and French, beyond subject 1, as their proficiency will warrant.

ANCIENT LANGUAGES. — Candidates for the degree of Master of Arts in Greek or Latin must have completed, for Greek, subjects 1, 2, 3, and 4 or 5; for Latin, subjects 1, 2, 3 or 4, and 5, or equivalents. It is desirable that candidates for this degree in either of the ancient languages present the other as a minor department. Exceptional cases will be treated in accordance with the varying circumstances. Greek 4, 5, 7, 8, and 9, Latin 3, 4, 6,and Classical Archæology 1, 2, 3, 4, 5, 6, 7, and 8, so far as these have not been anticipated as undergraduate work, may be counted towards the Master's degree. Graduate students will be expected to do work of an advanced character, either in classes with undergraduates or on special lines of investigation assigned by the instructors. The required thesis, on an approved topic, must embody the results of the investigation of some author or period, or of some philological or archæological subject. A reading knowledge of French and German is indispensable.

HISTORY AND PUBLIC LAW.—Before beginning graduate work in History and Public Law every student must have completed History 1 and 2, and Public Law 1 or 2, or their equivalent. The advanced subjects enumerated in the catalogue, in so far as they are suited to the needs of the candidate, may be offered for the higher degrees, but it is expected that much of the candidate's work will consist of special work pursued under the direction of the department.

For the degree of Master of Arts, a working knowledge of French is essential. A similar knowledge of German is desirable, and in some cases may be necessary. In addition to the subjects required for the degree candidates will be expected to do something in the way of an independent investigation of a definite subject, the result to be embodied in a thesis.

A final oral examination is customary.

POLITICAL SCIENCE.—The degree of Master of Arts in Political Science is conferred on graduates of Tufts College who pursue successfully one year of resident graduate study. Bachelors of Arts of other colleges must satisfy the department that they are qualified by previous training to enter upon the desired course of study, and show the results of a year's resident graduate work with high credit. A good reading knowledge of French and German is desirable, and may in certain lines of work be necessary. Before receiving the degree all candidates are expected to sustain a final oral examination, and give evidence by a thesis of their ability to do work of the investigative order. In addition to the regular advanced work offered by the department, special subjects giving opportunity for original investigation will be outlined for candidates wishing to pursue them.

MATHEMATICS.— Graduate students in Mathematics must have acquired a working knowledge of the calculus, and may offer as part of their work for the Master's degree any of the subjects given by the department except the first six, but subjects 7, 9, and 10, or their equivalents, must be included. Candidates will hold themselves in readiness to be examined at the end of their studies upon any topics treated in the first six subjects, as well as upon work offered for the degree.

CHEMISTRY.—The requirements for beginning graduate work in Chemistry are the completion of subjects 1, 2, and 3, or their equivalent. Subjects 4, 5, 7, 8, 9, 10, 12, and 14 may be counted toward the Master's degree, if they have not been counted as undergraduate work. Examination is required, and a satisfactory thesis.

PHYSIOLOGICAL CHEMISTRY. — The work in Physiological Chemistry requires in preparation a thorough foundation in inorganic and organic chemistry, including qualitative and quantitative analysis ; the ability to read scientific French and German readily; and a thorough knowledge of the elements of physics, particularly with reference to the laws of the density of gases and fluids under heat and pressure, as well as such acquaintance with optics as will enable one to use intelligently the polariscope, the spectroscope, and the microscope.

The course is one of laboratory work wholly, under the personal advice and assistance of the instructor, and must include one original investigation, to require not less than one half-year, and to be accompanied by a satisfactory thesis upon the results of such research. The subject of this investigation may be taken from the realm of enzymes, metabolism, or hygiene. A rigid examination will also be demanded upon the principles of physiological chemistry.

PHYSIOLOGY.—Before beginning graduate work in Physiology the candidate for the degree of Master of Arts must have had at least a year's training in biology, and, besides, a knowledge of the outlines of anatomy and physiology such as may be obtained from such works as Martin's Human Body, with simple laboratory experiments. A reading knowledge of French and German is desirable, and in some cases may be necessary. The work of the year is largely practical. It involves the completion of the work in physiology required of candidates for the degree of Doctor of Medicine, and, in addition, the investigation of some simple problem which shall serve as the basis of the required thesis.

BIOLOGY.—Before beginning graduate work in Biology the student must have a good knowledge of the elements of vertebrate and invertebrate anatomy and of physiology (subjects 1 to 4 of Tufts College, or their equivalent), and must be able to use French and German. The work offered for advanced degrees is in the lines of comparative anatomy and of the histology and embryology of animals. Consequently the greatest stress will be laid upon laboratory work, but students may also take the subjects numbered 5, 6, 8, and 9.

For the degree of Master of Arts or Master of Science the student must pass a satisfactory examination in the principles of morphology, and present an acceptable thesis embodying the result of research.

ELECTRICITY.—As a preparation for graduate work in Electricity the candidate must have a good mathematical foundation, including some knowledge of differential equations, must have credit in Physics 31-1, 31-2, 31-3, and 31-7, or their equivalents, and should have completed Electricity 61-3, 61-4, and 61-5. The last three subjects may count towards the Master's degree if not already counted towards the first degree.

Of the thirty term hours required, nine may be used in the preparation of a thesis.

FELLOWSHIPS

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY.—In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowship. The income of these fellowships, amounting to two hundred and fifty dollars annually each, is awarded by the Trustees to graduate students in Natural History, upon recommendation of the Administrative Board. The conditions of the fellowships are as follows:—

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, and of ability to profit by the work to be done, as well as testimonials of good character from instructors or others. Any original article, either written or printed, is an aid in ascertaining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject, under the direction of the professor in charge of the department of Natural History. He may be called upon for minor services, such as conducting examinations, but he shall not be called upon to teach. He may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made half in January and half in June; but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

The holder of a fellowship may be eligible to a single re-election, but incumbency constitutes no claim to re-appointment.

SCHOLARSHIPS

The Trustees of Tufts College have established eleven scholarships, one in each department offering graduate work. Each scholarship gives free tuition to the incumbent, who is expected to devote himself exclusively to advanced study.

These scholarships are awarded by the Graduate Faculty, on recommendation of the heads of departments concerned, at or before the beginning of the year in which they are to be conferred. Applications must be made to the President on or before May 1 of the preceding year, and will regularly be acted upon at the June meeting of the Graduate Faculty.

TUITION

The tuition fee for the whole course for the degree of Master of Arts, or Master of Science, is *one hundred dollars*, of which *fifty dollars* is payable in advance.

THE CRANE
THEOLOGICAL SCHOOL

Faculty of the Crane Theological School*

WILLIAM LESLIE HOOPER, A.M., Ph.D., Acting President

LEE S. McCOLLESTER, D.D., Dean
Packard Professor of Christian Theology

CHARLES H. LEONARD, A.M., D.D., LL.D., Dean, Emeritus
Goddard Professor of Homiletics and Pastoral Theology

WILLIAM H. REED, Jr., A.M., Secretary †

GEORGE M. HARMON, A.M., D.D.
Professor of Biblical Theology

WILLIAM G. TOUSEY, A.M., D.D.
Professor of Ethics and the Philosophy of Theism

HENRY I. CUSHMAN, A.M., Ph.D.
Instructor in Homiletics and Pastoral Care

HINCKLEY G. MITCHELL, D.D.
Professor of Hebrew and Old Testament Exegesis

ADOLF A. BERLE, D.D.
Woodbridge Professor of Applied Christianity

LUCIUS M. BRISTOL, A.M., S.T.B.
Professor of Applied Christianity

EDWIN C. BOLLES, A.M., PhD., D.D., LL.D.
Dickson Professor of English and American History

J. STERLING KINGSLEY, Sc.D.
Professor of Biology

RICHARD JONES, Ph.D.
Professor of English Literature

ALFRED C. LANE, A.M., Ph.D.
Pearson Professor of Geology and Mineralogy

HENRY C. METCALF, A.B., Ph.D.
Jackson Professor of Political Science

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*Below the line are printed the names of professors who, while not members of the Theological Faculty, offer subjects that are open to students of the School.

†*Ex officio*, as Secretary of the Department of Arts and Sciences.

KARL SCHMIDT, A.M., Ph.D.
Professor of Philosophy

CHARLES ST. CLAIR WADE, A.M.
Professor of the Greek Language and Literature

ALBERT H. GILMER, A.M.
Instructor of English

ARTHUR I. ANDREWS, Ph.D.
Professor of History

OSCAR MARTIN, M.D.
Director of the Gymnasium

COMMITTEE ON PROMOTIONS

Acting President Hooper, *Chairman;* Professors McCollester and Tousey.

COMMITTEE ON CURRICULUM

Dean McCollester, *Chairman;* Professors Harmon, Mitchell, and Bristol.

NON-RESIDENT LECTURERS

Men, lawyers, and ministers, of the Universalist and other churches, specialists in their departments, will give lectures to the students during the year.

SPECIAL BULLETIN

In the spring a bulletin wlll be published, giving new information regarding courses. The object is to make Crane primarily a professional school, eqnipping men for modern efficient religious leadership in both rural and city communities.

The Crane Theological School

The Theological School is one of the co-ordinate departments of Tufts College. Students of the School are members of the College, enjoying its privileges and subject to its regulations.

COURSES OF STUDY

A course of three years, open to college graduates, leads to the degree of Bachelor of Divinity.

A course of six years leads to the degrees of A.B. and B.D., the requirements for admission being the same as those for candidates for the degree of A.B.

A course of four years leads to the degree of B.D., the requirements for admission being the same as those for candidates for the degree of A.B.

Special courses are arranged for such persons as may be deemed by the Faculty qualified for work in the School.

SYNOPSIS OF THE REQUIREMENTS FOR A.B. AND B.D.

[The unit here used (called the "term hour") is equivalent to one program hour a week for a half-year.]

	TERM HOURS
LANGUAGE (Greek, Latin, German, French; each student to take *three*)	18
SCIENCE (Mathematics, Physics, and Biology or Chemistry)	18
HISTORY (Civil and Religious)	18
BIBLE	27
PHILOSOPHY (Psychology, Logic, Ethics, Systematic Theology, etc.)	30
SOCIOLOGY (Economics and Applied Christianity)	12
ENGLISH (Rhetoric, Literature, Oratory, and Homiletics)	36
PASTORAL CARE	6
PHYSICAL TRAINING	2
ELECTIVES	15
Total term hours	182

SYNOPSIS OF THE FOUR-YEAR COURSE FOR B.D.

[The unit here used (called the "term hour") is equivalent to one program hour a week for a half-year.]

	TERM HOURS
BIBLE	33
PHILOSOPHY (Logic, Ethics, Theology)	21
ENGLISH (Rhetoric, Literature, Oratory, Homiletics)	30
HISTORY (Civil and Religious)	18
APPLIED CHRISTIANITY	6
PASTORAL CARE	6
PHYSICAL TRAINING	2
ELECTIVES	6
Total	122

For all theological students the major instructor and official adviser on general matters relating to college affairs is the Dean of the Theological School, or some appointed representative from the Theological Faculty.

Departments of Instruction

58 OLD TESTAMENT

PROFESSOR MITCHELL

The constant aim in this department will be to give the student such a knowledge of the Hebrew Scriptures as will enable him personally to appreciate their varied excellence and utilize them as a source of inspiration and instruction in his ministry. The first step in this direction is the acquisition of a working knowledge of the Hebrew language; the second a thorough course in exegesis. Those who take these courses will be able to study with profit such general subjects as Introduction to the Old Testament, History of the Hebrews, and Ethics, or Theology of the Old Testament, as they are offered.

SUBJECTS

3. The Hebrew Language. First Semester: the elements of Hebrew etymology, with exercises in reading and writing Hebrew. Second Semester; readings from the books of Judges and Samuel, with notes and references on Hebrew syntax. PROFESSOR MITCHELL

[6. The Narrative Literature. A comparative study of the historical books to determine their relative value from the literary, historical, and religious standpoint. *Two hours.* (F) PROFESSOR MITCHELL]

[7. The Prophetic Literature. An examination of selections from the works of the principal prophets, to ascertain the literary and doctrinal peculiarities of each, and his place in the development of Hebrew prophecy. *Two hours.* (S) PROFESSOR MITCHELL]

8. The Didactic Literature. The books of Job, Proverbs, and Ecclesiastes, and their significance for the history of Hebrew thought. (F) PROFESSOR MITCHELL

9. The Lyric Literature. Early songs; select psalms of devotional or theological importance; the Song of Solomon and its structure and meaning. (S) PROFESSOR MITCHELL

[10. The Ethics of the Old Testament. A survey of the development of moral ideas among the Hebrews, with lectures and papers. *One hour.* PROFESSOR MITCHELL]

11. Introduction to the Old Testament. An inquiry into the age, structure, authorship, and history of the several books, with lectures and papers. PROFESSOR MITCHELL

68 NEW TESTAMENT

PROFESSOR HARMON

This department has three divisions: History, Criticism, and Exegesis; and for students who have not had Greek, a course in New Testament Greek is provided. The historical course covers the two centuries preceding the ministry of Jesus, with the aim to give the student a knowledge of the conditions under which Christianity entered the life of the world, the ministry of Jesus, and the rise and development of the Apostolic Church. The method pursued in this study is to refer the student to authorities dealing with the topics assigned and notes given by the instructor. In Criticism the student deals with the sources of the text and the methods for determining its correctness, also with the facts of the different New Testament writings. In this the method pursued is the same as in the study of the history. In Exegesis the work is of reading selected passages from the Greek of the Synoptic Gospels, the Fourth Gospel and the Pauline Epistles. The instructor gives the student from time to time notes as to the principles of exegesis, requiring him to exemplify them in his work. He is also taught the discriminating use of commentaries with the aim to form the habit of independent and correct interpretation. In New Testament 4 the subject taught is the application of essential teachings of the New Testament to the conditions and needs of our modern social and individual life; and the method pursued is to assume the results of exegesis, divest them of their local and temporal elements, arriving at what is permanent, and endeavor to find their parallels in the life of to-day. The aim is to furnish the student with topics and material for sermon work, and to equip him for biblical preaching.

SUBJECTS

11.	History of the Beginnings of Christianity.	PROFESSOR HARMON
2.	New Testament Criticism. *Three hours.* (S)	PROFESSOR HARMON
3.	New Testament Exegesis and Theology.	PROFESSOR HARMON
4.	New Testament Greek. *Three hours.*	PROFESSOR HARMON
5.	New Testament Ethics. *Three hours.*	PROFESSOR HARMON

56 HISTORY OF RELIGIONS

PROFESSOR MCCOLLESTER AND PROFESSOR BERLE

The department of History of Religions deals with a special phase of the general subject of history, showing the growth of religion, and its relation to civilization — including politics, social life, philosophy, literature, art, and personal character. See also the subjects listed in the departments of Old Testament and New Testament.

SUBJECTS

4. History of Religions. This course seeks to give an outline of the origin and development of religion from the tribal cults of primitive races to the great ethnic religions, excluding Christianity. It will deal with the

evolution from the primitive stages of social life and culture to the higher forms of religious organization, as shown among the Hebrews, the Chinese, the Japanese and the Egyptians. It will present the religions of the Semites in their various groups. It will outline the religion of the Greeks, Romans and Persians, and the systems of India, both ancient and modern. The purpose will be to present a comparative view of the social-religious development of the world prior to the advent of Christianity. Lectures, thesis and outlines of reading. (F) PROFESSOR BERLE

5. History of the Christian Religion. The course will present a review of the rise and expansion of the Christian religion and its relation to the historical, social, intellectual and cultural movements of the world to the present time. Its differentiation into churches and sects. Its influences on life and civilization and its own modifications with the changes in civilization. It will trace the permanent and the transient forces in Christian history. Lectures, theses and outlines of reading. PROFESSOR BERLE

6. Special Investigations in the History of Religion. A course in research into particular questions of the origin and development of religion. This course is open only to students who have taken History of Religions 4 and 5 and who have a reading knowledge of French. *Three hours.* (S) PROFESSOR BERLE

7. Ancient and Modern Universalism. PROFESSOR MCCOLLESTER

16 ETHICS AND PHILOSOPHY OF THEISM

The several courses in Ethics and the Philosophy of Theism offered by Professor Tousey of the School of Liberal Arts are open to theological students, and are included in the curriculum of the Theological School. For detailed statement of subjects, see Philosophy 6, 7, 8, and 15 in the statement of that department in the School of Liberal Arts.

86 THEOLOGY

The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose, attempt is made to co-ordinate the products of biblical theology, religious history, natural theology, ethics, and, indeed, of all the proper sources of material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The method includes several stages: —

1. The history of important doctrines and creeds, as a general introduction.

2. *a.* Special history of the topic in hand, with analysis and classification of opinions and theories according to their logical relations.

b. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.

c. The organization of the results into a scientific product.

d. Illustrative applications to practical problems,—ecclesiastical, political, social, and personal.

SUBJECTS

1. Historical Introduction. *Three hours.* (S) PROFESSOR BERLE

[2. Theology; anthropology; soteriology; eschatology; critical study of modern doctrines. ——— ———]

3. The Philosophy of Universalism. PROFESSOR McCOLLESTER

76 APPLIED CHRISTIANITY

PROFESSOR BERLE AND MR. BRISTOL

Christianity will be considered with special reference to the practical problems of life, individual and social, under the three general aspects of religious education, religious expansion and social regeneration. The subjects considered will deal with the religious view of every aspect of modern society.

SUBJECTS

5. Religious Pedagogy. Various problems of moral and religious education; Sunday School organization and methods. *Th 7.* MR. BRISTOL

6. Home Missions. Immigration; the race problem in America; the church and the rural community. *TT 6.* (F) MR. BRISTOL

7. Foreign Missions. Sociological aspects of Missionary endeavor in selected countries. For the current year, China and Japan. *TT 6.* (S) MR. BRISTOL

[8. The Genetic History of Social Ideas in the Light of Christian Teaching. The Rise and Organization of Society and the Development of Social Orders. The Evolution of the Social Ideal. The Morphology of Social Ideas under Christian Influence. The Social Sources of Christian Institutions. (F) PROFESSOR BERLE]

[9. The Christian Church as a Social Instrument. The functions of the primitive church and the expansion of church activities, educational, political and therapeutic. Modern re-distribution of these functions and re-adjustment to the industrial and economic needs of democratic society. (S)
PROFESSOR BERLE]

10. Ethical Aspects of Modern Industrial Organization. The comparative examination of the stages of industrial development. Contrasts between mediæval and modern conceptions of industry. The social interpretation of industry. The rise of sociological jurisprudence and its significance in the future of industry. (F) PROFESSOR BERLE

11. The Economic Principles of a Christianized Society. Political and Economic principles examined in the light of the teaching of Jesus Christ. The fundamental laws of Christian society stated and compared with prevailing systems of political economy. Possibilities and limitations of a Christian state. *Three hours, to be arranged.* (S) PROFESSOR BERLE

82 HOMILETICS

DR. H. I. CUSHMAN

The work consists of studies in constructive homiletics; the varying conception of preaching as determined by the person and the time; helps in the preparation of sermons from the study of history, literature, and character; the preparation and delivery of sermons; practice in extempore discourse; the cultivation of power in preaching; the study of representative preachers.

SUBJECTS

1. Introductory Course in Homiletics. (*a*) Lectures and Recitations on the basis of text book, Hoyt's "The work of Preaching." *One hour.* (F) (*b*) Sermon Making. Short extempore and written sermons on texts or topics chosen by students or assigned by the instructor. *One hour.* (*c*) Cultural study of the words and life of Christ as fundamental preparation for preaching. *One hour.* (*d*) Conferences. *MWF 6.*
DR. H. I. CUSHMAN

2. Advanced course in Homiletics. (*a*) Lectures and Recitations on the basis of text book, Hoyt's "The Preacher." *One hour.* (F) (*b*) The art of preaching. Practice in the making of sermons, and in their delivery in class. *One hour.* (*c*) Pastoral Care. Studies in the conduct of Public Worship, and of special services on the basis of Dean Leonard's Book of Prayer. Baptism, Confirmation, the Holy Communion, Marriages and Funerals will be considered; also, Parish Calls and other pastoral functions with Gladden's "The Christian Pastor" as a book of reference. *One hour.* (S) (*d*) Conferences. *MWF 5.* DR. H. I. CUSHMAN

THE PROFESSION OF THE MINISTRY

PROFESSOR MCCOLLESTER

Lectures on Ministerial habits; scientific management of parishes; quiz classes; case work; reading courses; church architecture; Universalist policy; Interdenominational relations.

SIX-YEAR COURSE

A detailed synopsis follows of the Course of Six Years, arranged for one who enters with Greek * and Latin, and leading to degrees A.B. and B.D.

FIRST YEAR

FIRST TERM		SECOND TERM	
English 1	3	English 2	3
Mathematics 3	3	Mathematics 1 or 2	3
Physics 1	3	Physics 1	3
Greek 2	3	Greek 2	3
French or German	3	French or German	3
Physical Training		Physical Training	

SECOND YEAR

FIRST TERM		SECOND TERM	
Philosophy 1	3	Oratory 1	3
History 1	3	History 1	3
Biology 1 or Chemistry 1	3	Biology 1 or Chemistry 1	3
German or French	3	German or French	3
English (elective)	3	English (elective)	3
Physical Training		Physical Training	

THIRD YEAR

FIRST TERM		SECOND TERM	
Political Science 1	3	Political Science 1	3
History of Religions 5	3	History of Religions 5	3
New Testament 11	3	New Testament 11	3
Philosophy 3	3	New Testament 2	3
Oratory 2	3	One elective	3

FOURTH YEAR

FIRST TERM		SECOND TERM	
New Testament 3	3	New Testament 3	3
Old Testament 3	3	Old Testament 3	3
Philosophy 6	3	Philosophy 7	3
Applied Christianity	3	Applied Christianity	3
English (elective)	3	English (elective)	3

FIFTH YEAR

FIRST TERM		SECOND TERM	
Homiletics 1	3	Homiletics 1	3
Philosophy 15	3	Philosophy 15	3
Theology 2	3	Theology 2	3
Old Testament 6 or 8	2	Old Testament 7 or 9	2
Old Testament 10 or 11	1	Old Testament 10 or 11	1
One elective	3	One elective	3

SIXTH YEAR

FIRST TERM		SECOND TERM	
Homiletics 2	3	Homiletics 2	3
History of Religions 4	3	History of Religions 6	3
Philosophy 55	3	Philosophy 55	3
Electives	6	Electives	6

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* Those who enter with no Greek must take New Testament Greek in place of one of the free electives, and may substitute Latin 1 for Greek 2.

FOUR-YEAR COURSE

A detailed synopsis follows of the Course of Four Years, arranged for one who enters without Greek,* and leading to the degree of B.D.

FIRST YEAR

First Term		Second Term	
English 1	3	English 2	3
History 1	3	History 1	3
New Testament 11	3	New Testament 11	3
Philosophy 3	3	New Testament 2	3
One elective	3	Oratory 1	3
Physical Training		Physical Training	

SECOND YEAR

First Term		Second Term	
Philosophy 6	3	Philosophy 7	3
New Testament 4	3	New Testament 4	3
History of Religions 5	3	History of Religions 5	3
English (elective)	3	English (elective)	3
Oratory 2	3	One elective	3
Physical Training		Physical Training	

THIRD YEAR

First Term		Second Term	
Homiletics 1	3	Homiletics 1	3
Old Testament 3	3	Old Testament 3	3
New Testament 3	3	New Testament 3	3
History of Religions 4	3	History of Religions 6	3
Philosophy 15	3	Philosophy 15	3

FOURTH YEAR

First Term		Second Term	
Homiletics 2	3	Homiletics 2	3
Theology 2	3	Theology 2	3
Old Testament 6 or 8	2	Old Testament 7 or 9	2
Old Testament 10 or 11	1	Old Testament 10 or 11	1
Applied Christianity	3	Applied Christianity	3
Elective	3	Elective	3

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* One who enters with Greek and Latin has a larger range of electives.

Supplementary Information

[See also the section devoted to General Information.]

RELIGIOUS OBSERVANCES

The students in the Crane Theological School attend daily morning prayer in Goddard Chapel; and religious services, in the care of the students, are held in Packard Hall from time to time.

SUPPLEMENTARY LECTURES

Lectures which bear upon the general work of the Christian ministry, and upon special subjects of study, are given at intervals throughout the year by well-known clergymen and others of the vicinity.

The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the School to encourage the judicious use of these important instrumentalities of culture.

LICENSE TO PREACH

The regular time for applying for licensure is a year and a half before graduation. Before that time the members of the Theological School are not allowed to preach.

BUILDINGS FOR THE USE OF THE THEOLOGICAL SCHOOL

The building formerly known as Middle Hall has been entirely remodelled and fitted for the use of the Theological School under the name of Packard Hall. It contains five well-lighted lecture rooms, a chapel, a library, and offices for the members of the faculty.

Paige Hall, the dormitory of the Theological School, contains thirty-six single rooms, heated by steam and lighted by gas and electricity. Each room is provided with all necessary furniture — except sheets, blankets, pillow-cases, and towels.

EXPENSES AND PECUNIARY AID

Students in the Theological School are charged *one hundred dollars* annually for tuition. This charge includes the privilege of occupying a room in Paige Hall, and provision for heating and caring for it.

The following scholarships are assigned exclusively to theological students; certain prizes are also available under conditions, especially as described under "General Information."

The General Convention of Universalists aids students by free scholarships, not exceeding one hundred and twenty-five dollars a year to any one student, subject always to the recommendation of the Faculty of the Theological School. Those students, also, who are in the regular course are permitted to preach, under the direction of the Faculty, during the year-and-a-half preceding their graduation. In this way they may add to their pecuniary resources.

THE GREENWOOD SCHOLARSHIP.—The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given to that member of the advanced class in homiletics who, maintaining a high standard of work as a student, has made in all the work in Homiletics and Oratory the most satisfactory progress.

THE JOHN MURRAY SPRAGUE AND ELIZA FLETCHER SPRAGUE SCHOLARSHIP.—The income of two thousand dollars, bequeathed by the late John M. Sprague, is appropriated to the aid of needy and deserving students in the Crane Theological School, preference being given to any student, otherwise eligible, who is a direct descendant of the donor's father, John Sprague.

THE DOCKSTADER SCHOLARSHIP.—The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The following scholarships amount to fifty dollars each :—

THE WHITTEN SCHOLARSHIP.—Founded by Mrs. Maria F. Whitten, of Cambridge.

THE HOLT SCHOLARSHIP.—Founded by Miss Celia Holt, of Stafford, Conn.

THE HENRY L. BALLOU SCHOLARSHIP.—Founded by Susan Ballou, of Woonsocket, R. I.

TWO BRADLEE SCHOLARSHIPS.—Founded by the late Caleb D. Bradlee, D.D., of Brookline.

TWO GOLDTHWAITE SCHOLARSHIPS.—Founded by the late Willard Goldthwaite, of Salem.

THE SARAH ELIZABETH PERKINS SCHOLARSHIP.—Founded by James D. Perkins, of Brooklyn, N. Y.

TWO LUCIUS R. PAIGE SCHOLARSHIPS.—Founded by the late Lucius R. Paige, D.D., of Cambridge, Mass.

TWO ANN M. PAIGE SCHOLARSHIPS.—Founded by the late Ann M. Paige, wife of the late Rev. Lucius R. Paige, of Cambridge, Mass.

FOUR CATHERINE CONANT SCHOLARSHIPS.—Founded by the late Mrs. Catherine Conant, of Newark, N. J.

The income of five hundred dollars, given by REV. JOHN VANNEVAR, is used in the purchase of books for the Department of Homiletics.

JACKSON COLLEGE

Faculty of Jackson College

WILLIAM L. HOOPER, A.M., PH.D., ACTING PRESIDENT.

CAROLINE STODDER DAVIES, A.B., DEAN
Professor of Greek

WILLIAM H. REED, JR., A.M., SECRETARY
Professor of Modern Languages

LIZZIE MAUD CARVILL, A.B., M.D.
Instructor in Physical Training

The instructing staff is identical with that of the School of Liberal Arts of Tufts College.

Standing Committees

ADMISSIONS: Dean Davies, *Chairman;* Professors Wren and Reed.

ABSENCES AND PETITIONS: Dean Davies, *Chairman;* Professor Reed.

SCHOLARSHIPS AND AIDS: Acting President Hooper, *Chairman;* Dean Davies, Professors Wren, Anthony, McCollester, and Reed.

CATALOGUE: ——— ——— *Chairman;* Dean Davies, Professors Wren, Anthony, and McCollester, Dr. Briggs.

STUDENT EMPLOYMENT: Dean Davies, *Chairman;* Dean Wren and Mr. Seavey.

PROMOTIONS: Dean Davies, *Chairman;* Professors Wren, Fay, Metcalf, and Andrews.

ADVISORY COMMITTEE ON WOMEN'S ATHLETICS: Dr. Carvill, *Chairman;* Dean Davies.

STUDENT ORGANIZATIONS: Dean Davies, *Chairman;* Professors Lewis and Reed.

Jackson College

Unlike most of the women's colleges affiliated with colleges for men, Jackson College is the result, not of a slow growth whose beginnings were almost imperceptible, but of a metamorphosis which seemed to ignore all precedents.

Jackson College for Women was authorized by act of the Legislature of Massachusetts in 1910, and was opened on September 22nd of the same year. It is a further step in the development of the work of Tufts College in providing for the collegiate education of women. The beginning was made when Tufts opened all its courses to women on the same terms as to men in 1893. Sixteen years of experience seemed to show that it was possible to do still better work for women than was being done under a system of co-education. In 1907 the annual report of the President of Tufts College called the attention of the Trustees to what he considered the failure of the co-educational experiment at Tufts. Two years later a committee was appointed by the Trustees to investigate and report upon the matter of co-education in Tufts College. After careful discussion this report was accepted at a meeting of the Trustees, April 14, 1910, and application was made to the Legislature for the necessary charter amendments. As a department of Tufts College, Jackson College is therefore able to offer to its students a combination of the advantages of a woman's college and a co-educational college with comparative freedom from the peculiar disadvantages of each system.

The courses offered in Jackson College are identical with those offered in the School of Liberal Arts; and are given by the same instructing staff.

The requirements for the degrees of A.B. or B.S. are the same as in Tufts College. The diploma is certified over the signature of the President and Secretary of the Trustees of Tufts College as similar and equal to that issued under like name and upon similar conditions to the students of Tufts College.

Women who were registered in Tufts College before the establishment of Jackson College may, if they choose, receive the degree from Tufts.

GRADUATE WORK

No graduate courses are offered in Jackson College, but women are admitted to the Graduate School of Tufts College.

EXPENSES

The tuition charges and incidental expenses are the same as in Tufts College. Room rent varies from $40 to $85, according to the location of rooms.

REGISTRATION, REGULATIONS, ETC.

Full information concerning the administration and organization of Jackson College will be found in a special pamphlet to be had on application to the Dean or the Secretary of Jackson College, Tufts College, Mass.

SCHOLARSHIPS

In addition to the Scholarships named below, a certain proportion of the Scholarship funds of Tufts College has been set apart for the students of Jackson College. The conditions and form of application are the same.

FIVE JOHN AND LUCY H. STOWE SCHOLARSHIPS.—Five scholarships for women students, founded by the late Mrs. Lucy H. Stowe of Lawrence.

TWO MARY AND LUTHER GILBERT SCHOLARSHIPS.—Founded by Mrs. Mary G. Knight, of Roxbury, for the benefit of women.

ALPHA OMICRON PI PRIZE SCHOLARSHIP.—Founded by the alumnæ of the Tufts Chapter of Alpha Omicron Pi, and given to that woman in the senior class who shall have made the best record in the prescribed work of the A. B. Course.

ALPHA XI DELTA PRIZE SCHOLARSHIP.— Founded in 1910 by the Lambda chapter of Alpha Xi Delta and given to that woman who, at the end of the Junior year, holds the highest rank in the Course of Teaching.

FUNDS FOR WOMEN

The Woman's Universalist Missionary Society of Massachusetts maintains a fund which is loaned to deserving women students, in sums of one hundred dollars, at four per cent. This fund now amounts to about six thousand dollars.

The Hettie Lang Shuman Memorial Fund was founded by Mr. A. Shuman, who presented one thousand dollars to the College, in memory of his wife. The interest of this fund is annually expended in aiding deserving women students.

The Massachusetts Society for the University Education of Women has at its disposal a small loan fund, and also a limited amount of money devoted to scholarship purposes for regular students in the upper classes. Inquiries concerning both of these may be made of the Dean.

BUILDINGS

Miner Hall contains the office of the Dean, class rooms, reception and locker rooms, bookstore, etc.

The Library and laboratories are used in common with Tufts College.

The daily chapel service is held in Goddard Chapel at 8.30.

Dormitory accommodations are provided for women in Metcalf Hall, Start House, and Richardson House.

Students of Jackson College are required to reside in the dormitories or with their families.

THE MEDICAL SCHOOL

Faculty of the Medical School*

WILLIAM LESLIE HOOPER, A.M., Ph.D.
Acting President Tufts College

HAROLD WILLIAMS, A.B., M.D., LL.D. . . . . 528 Beacon St.
Dean, *and Professor of the Theory and Practice of Medicine*

FREDERIC MELANCTHON BRIGGS, A.B., M.D.
31 Massachusetts Ave.
Professor of Surgery and Secretary of the Faculty

JOHN LEWIS HILDRETH, A.M., M.D., LL.D. . . 55 Fletcher St.,
Professor of Clinical Medicine, Emeritus Winchester

ERNEST WATSON CUSHING, A.B., M.D., LL.D. 168 Newbury St.
Professor of Abdominal Surgery and Gynaecology

EDWARD OSGOOD OTIS, A.B., M.D. . . . . . . 381 Beacon St.
Professor of Pulmonary Diseases and Climatology

MORTON PRINCE, A.B., M.D. LL.D. . . . . 458 Beacon St.
Professor of Diseases of the Nervous System, Emeritus

WILLIAM MERRITT CONANT, A.B., M.D. . 486 Commonwealth Ave.
Professor of Clinical Surgery

FRANK GEORGE WHEATLEY, A.M., M.D. . . . North Abington
Professor of Materia Medica and Therapeutics

HENRY BECKLES CHANDLER, C.M., M.D. . . . 34½ Beacon St.
Professor of Ophthalmology

JAMES SULLIVAN HOWE, M.D. . . . . . . 437 Marlborough St.
Professor of Dermatology

EDWARD BINNEY LANE, A.B., M.D. . . . . . . 419 Boylston St.
Professor of Mental Diseases

EDWARD MAVERICK PLUMMER, M.D. 5 Adams St., Charlestown
Professor of Otology

GEORGE HAMLIN WASHBURN, A.B., M.D. . 377 Marlborough St.
Professor of Obstetrics, Emeritus

JOHN JENKS THOMAS, A.M., M.D. . . . . . . 88 Bay State Road
Professor of Neurology

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* The names of the Faculty of Medicine, after the President, the Dean, and the Secretary, are arranged in the order of academic seniority. The post-office address is Boston, Mass., unless otherwise indicated.

JOHN LINCOLN AMES, A.B., M.D. . . . . 70 Chestnut St.
Associate Professor of the Theory and Practice of Medicine

WILLIAM ALLEN BROOKS, Jr., A.M., M.D. . . . . 167 Beacon St.
Assistant Professor of Clinical Surgery

WILLIAM ELISHA CHENERY, A.B., M.D. . . 222 Huntington Ave.
Professor of Laryngology

CHARLES MELVILLE WHITNEY, M.D. . 386 Commonwealth Ave.
Professor of Genito-Urinary Diseases

GEORGE ANDREW BATES, M.Sc., D.M.D. . . . . . . Auburndale
Professor of Histology

EUGENE THAYER A.M., M.D. . . . 2683 Washington St., Roxbury
Demonstrator of Anatomy

GEORGE VAN NESS DEARBORN, A.M., M.D., Ph.D. 6 Mason St.,
Professor of Physiology Cambridge

GEORGE WARTON KAAN, M.D. . . . . 419 Boylston St.
Professor of Clinical Gynaecology

CHARLES FAIRBANK PAINTER, A.B., M.D. 372 Marlborough St.
Professor of Orthopedic Surgery

WILLIAM ROBIE PATTEN EMERSON, A.B., M.D. 657 Boylston St.
Assistant Professor of Children's Diseases

EDWARD NORTON LIBBY, A.B., M.D. . . . . 1990 Columbus Ave.
Assistant Professor of Theory and Practice of Medicine

CHARLES DAVISON KNOWLTON, M.D. . 574 Warren St., Roxbury
Assistant Professor of the Theory and Practice of Medicine

LEO VICTOR FRIEDMAN, A.B., M.D. . . . . 425 Marlborough St.
Assistant Professor of Obstetrics

TIMOTHY LEARY, A.M., M.D. . . . 44 Burroughs St., Jamaica Plain
Professor of Pathology and Medical Jurisprudence

STEPHEN RUSHMORE, A.B., M.D. . . . . . . 407 Marlborough St.
Associate Professor of Gynaecology

ALFRED WILLIAM BALCH, Ph.G., M.D. . 44 Linden St., Brookline
Professor of Medical Chemistry and Toxicology

HARRY HOMER GERMAIN, M.D. . . . . . . 416 Marlborough St.
Assistant Professor of Anatomy

ELMER WALTER BARRON, A.B., M.D. . . 300 Pleasant St., Malden
Assistant Professor of Children's Diseases

OLGA CUSHING-LEARY, M.D. . . 44 Burroughs St., Jamaica Plain
Assistant Professor of Pathology and Bacteriology

FRANK EUGENE HASKINS, PH.G., M.D. . . 204 Huntington Ave.
Assistant Professor of Materia Medica and Therapeutics

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Instructor in Medical Jurisprudence

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Instructor in Clinical Medicine

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LUTHER GORDON PAUL, M.D. . . . . 321 Beacon St.
Instructor in Surgery

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Assistant in Laryngology

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Assistant in Clinical Medicine

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Assistant Demonstrator of Anatomy

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Assistant Demonstrator of Anatomy

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Assistant Demonstrator of Anatomy

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Assistant Treasurer

EUGENE EVERETT SHEPARD . . . 43 Boston Ave., W. Medford
Bursar

LINA A. MAYO . . . . Milton
Stenographer

LILLIAN M. TATTAN . . . . Somerville
Clerk to Secretary

STANDING COMMITTEES OF THE MEDICAL SCHOOL

The Dean and the Secretary are members of all standing committees, *ex officiis.*

ADMINSTRATION. — The President, Drs. Wheatley, Conant, Leary, and Painter.

NOMINATIONS. — Drs. Wheatley, Lane, and Whitney.

LIBRARY. — Drs. Otis, Howe, and Cushing.

COURSE OF INSTRUCTION. — Drs. Leary, Ames, Bates, and Painter.

ADMISSION. — Drs. Leary, Dearborn, Germain, and Professor Wren.

WOMEN'S ADVISORY COMMITTEE. — Drs. Elizabeth A. Riley, Olga Cushing-Leary, and Edna Weil-Dreyfus.

SPECIAL COMMITTEES

HOSPITAL COMMITTEE. — Drs. Conant (Chairman), Otis, Wheatley, Whitney, Painter and Germain.

LABORATORY ASSISTANTS

Anatomy

WILLIAM E. BROWNE . . . . Boston
HENRY B. ELKIND . . . . Worcester
WILLARD L. WRIGHT . . . . Keene, N. H.
WINTHROP ADAMS . . . . Cambridge
REGINALD D. MARGESON . . . . Westwood

Physiology

ALFRED W. BROWN . . . . Quincy
EDGAR S. POTTER . . . . Chepacket, R. I.
ALFRED E. GALLANT . . . . Waltham
EDWARD M. HODGKINS . . . . Dorchester

Student Government Board

The members for the current year of the Student Government Board are as follows: —

CHAIRMAN

Elmer Stanley Bagnall, M '13

SECRETARY

Joseph Francis Sullivan, D '13

MEDICAL SCHOOL:

- Alfred W. Brown, '13
- Henry L. Davis, '14
- Winthrop Adams, '15
- Nicholas Du Vally, '16

DENTAL SCHOOL:

- Fred E. Simm, '13
- Joseph M. Kelley, '14
- Charles L. Muloney, '15

Tufts College Medical School

416 Huntington Avenue

Boston, Mass.

Tufts College Medical School was established in Boston in 1893. It is co-educational, women being admitted upon the same terms as men. In its first year there were six members of the Faculty, and seventeen other instructors, or twenty-five in all. In the session 1912-13, there are thirty-four members of the Faculty and seventy-three other instructors, or one hundred and seven in all. In its first year there were eighty students; in the session 1912-13 there are 322 students. In its first year there was one clinic connected with the school; in the session 1912-13 there are sixteen clinics. The school was first located in rooms at 188 Boylston Street, where it remained three years, when an enrollment of 174 students made larger quarters necessary. Temporary accommodations were procured for the session 1896-97 in the building formerly occupied by the Chauncy Hall School, while a building was in process of construction on Shawmut Avenue. This building was occupied in the session 1897-98, and it was believed that it would meet the school's needs for a number of years. At the end of three years this building was found to be inadequate to the constantly increasing number of students, and to the constantly increasing requirements of medical education. A new building was erected on Huntington Avenue, and was occupied in the session 1901-02. Increasing requirements having necessitated more commodious quarters, the building has been enlarged and remodeled at an expense of $50,000. A fourth story has been added, and the building is now completely equipped with every facility for teaching Medicine in accordance with present requirements. There are six lecture rooms, the largest seating 400, the smallest seating 100, and each having the most modern seating arrangement. On the second, third, and fourth floors, extensive laboratories have been provided which give every facility for teaching Pathology, Bacteriology, Physiology, Histology, Chemical Pathology, Chemical Physiology, Neuropathology, Hematology and Pharmacology. Private research laboratories are connected with each general laboratory. The building has been made complete in every respect. It is heated and ventilated throughout by both the direct and indirect system, and is lighted by electricity. The laboratories have been arranged to give the best natural light. The lecture rooms have been planned to combine modern seating arrangements with the best acoustic properties, and are thoroughly equipped with opaque projection and lantern slide apparatus. The building is on the line of the Huntington Avenue Subway cars (except the Roxbury and Dorchester lines). All exercises are conducted at the school building in Boston and at the hospitals.

General Information

CLINICAL ADVANTAGES

Boston, as the largest city in New England, offers unusual facilities to the student of medicine. The amphitheatres of the Boston City Hospital, the Massachusetts General Hospital, and the Massachusetts Charitable Eye and Ear Infirmary, are open to students, and opportunity is thus afforded for witnessing the more extensive surgical operations.

Clinics are held at the Boston City Hospital, Boston Consumptive Hospital, Boston Dispensary, Boston Insane Hospital, Carney Hospital, Grace Hospital, Free Home for Consumptives, Dispensary for Women, Massachusetts General Hospital, Massachusetts Charitable Eye and Ear Infirmary, Massachusetts General Hospital, Massachusetts School for Feeble Minded, Massachusetts State Sanatorium for Treatment of Tuberculosis, Mount Sinai Hospital, St. Elizabeth's Hospital, St. Mary's Infant Asylum, Tremont Dispensary, and at various private clinics.

SESSIONS OF THE SCHOOL

The annual course of lectures begins on the last Wednesday in September of each year, and continues thirty-six weeks until the second Wednesday in June. The annual course of lectures for 1913-14 will commence Wednesday, September 24, 1913, at 3 o'clock P.M.

VACATIONS

There are no exercises at the School during three days at Thanksgiving, ten days at Christmas, and the week beginning April 6, 1913, nor upon Columbus Day, Washington's Birthday, Patriots' Day and Memorial Day.

OUTLINE OF THE COURSE

The course of study is a graded one, covering four annual sessions. In general the first two years consist of didactic and laboratory work; the last two years are chiefly clinical. During the latter part of the fourth year a certain latitude is allowed in the choice of elective subjects, but the course is otherwise uniform and the required subjects cover thoroughly the general ground of medicine, surgery, and the important special subjects.

For the first three years the school session is divided into two semesters of seventeen weeks each.

First Year

First Semester

Anatomy.—Lectures, recitations, demonstrations, and dissecting, *Twenty-eight hours a week.*

Second Semester

Applied Anatomy.—Lectures and demonstrations. *Two hours a week.*

Histology.—Lectures, recitations, demonstrations, and laboratory work. *Nine hours a week.*

Physiology.—Lectures, recitations, demonstrations, conferences, and laboratory work. *Twenty hours a week.*

Second Year

First Semester

Pathology.—Lectures, recitations, demonstrations, and laboratory work. *Twenty-five hours a week.*

Bacteriology.—Lectures, recitations, demonstrations, and laboratory work. *Five hours a week.*

Embryology.—Lectures, recitations, and laboratory work. *Three hours a week.*

Second Semester

Chemical Pathology.—Lectures, recitations, demonstrations, and laboratory work. *Seventeen hours a week.*

Materia Medica and Therapeutics.—Lectures, recitations, and laboratory work in Pharmacology. *Twelve hours a week.*

Toxicology.—Lectures, recitations, demonstrations, and laboratory work. *Three hours a week.*

Bandaging and Surgical Technique.—Lectures, demonstrations, and section exercises. *Twenty-four hours in all.*

The following subject is given throughout the school year:

Physical Diagnosis. — Lectures, demonstrations, recitations and section exercises. *Forty-eight hours in all.*

Third Year

The following subjects are given throughout the school year:

Theory and Practice.— Lectures, and recitations. *Three hours a week.*

Surgery.—Lectures and recitations (three hours), and two clinical lectures. *Five hours a week.*

Obstetrics.—Lectures, recitations, and demonstrations. (Attendance upon at least six cases of labor is required.) *Three hours a week.*

Diseases of Children.—One lecture at the school and one clinical lecture. *Two hours a week.*

Medical Diagnosis.—*Clinical lecture. *One hour a week.*

Ophthalmology.—*Twenty-four lectures.*

Laryngology.—*Twenty-four lectures.*

First Semester

Hygiene and Sanitation.— Lectures. *Two hours a week.*

Neurology.—*One *clinical lecture a week.*

Neuropathology.—*Sixteen lectures and eight hours of laboratory work.*

Second Semester

Hematology.—*Sixteen lectures and twenty-four hours of laboratory work.*

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*Clinical lectures are given at the hospitals connected with the School.

Pulmonary Diseases and Climatology.—*One clinical lecture* a week.*

Gynaecology.—Lectures and recitations. *Three hours a week.*

Genito-Urinary Diseases.—*Sixteen lectures.*

CLINICS

In addition to the above exercises, the students of the third year attend clinics, in sections, in the following subjects: —

Clinical Medicine;
Clinical Surgery;
Obstetrics (each student is required to take charge of at least four cases of childbirth);
Children's Diseases;
Pulmonary Diseases;
Ophthalmology;
Laryngology

The work in clinics averages *twelve hours a week for the year.*

Each student is required to serve one month as assistant at a clinic in the surgical department of an approved hospital.

Fourth Year

The fourth year is divided into three periods: —

The first period (twelve weeks) ends at the Christmas recess. The second period (thirteen weeks) ends at the spring recess. The third period (six weeks) follows the spring recess.

The work of the fourth year is both required and elective. It is essentially clinical and largely in sections.

The required work includes a continuation of the clinical work in the general subjects of medicine and surgery, and a grounding in the essentials of those specialties which have not been studied in the third year. The most of these special subjects are completed before the Christmas recess.

The elective work is a continuation of the work of the required course along selected lines. The student is required to take a certain amount of work, but may exercise his choice as to what he will elect from a large number of subjects offered.

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* Clinical lectures are given at the hospitals connected with the School.

Required Subjects

Class Exercises

Clinical Medicine (including Pulmonary Diseases).—Lectures and conferences at the School (two hours), and clinical lectures (three hours). *Five hours a week, thirty weeks.*

Clinical Surgery.—Lectures and conferences at the School (two hours), and one clinical lecture and operations (two hours). *Four hours a week, thirty weeks.*

Orthopedic Surgery.—Lectures, recitations, and demonstrations. *Three hours a week, thirty weeks.*

General Medicine.—Lectures and recitations. *Two hours a week, thirty weeks.*

Neurology.—One conference at the School and two clinical lectures each week. *Three hours a week, sixteen weeks.*

Psycho-Pathology.—Lectures. *Two hours a week during second period (twelve weeks).*

Children's Diseases.—Lectures and conferences. *One hour a week, thirty weeks.*

Otology.—Clinical lectures. *Two hours a week during first period (twelve weeks).*

Rectal Diseases.—Lectures. *One hour a week during first period (twelve weeks).*

Operative Obstetrics.—*Eighteen hours during the second period.*

Electro-Therapeutics.— Lectures. *One hour a week during first period (twelve weeks).*

Clinical Gynecology.—*Clinics (in small sections) *during first and second periods (twenty-five weeks).* Conferences *once a week during second period (thirteen weeks).*

Medical Jurisprudence.—Lectures and demonstrations. *One hour a week during first and second periods (twenty-five weeks).*

Dermatology.—*Clinical lectures. *Two hours a week during second and third periods (eighteen weeks).*

Operative Surgery and Surgical Anatomy.—This course is a sub-division of Clinical Surgery, and consists of lectures, demonstrations, and section work in operations on the cadaver. *Three hours a week for twelve weeks (second and third periods).*

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* Clinical lectures are given at the hospitals connected with the School.

Mental Diseases.—Lectures and clinical visits at hospitals for the insane. *Two hours a week during second and third periods* (*eighteen weeks*).

Genito-Urinary Diseases. — *Clinics during first period in sections. (*Twenty-four hours — see below.*)

Clinical Work in Sections

Twelve hours a week are assigned to clinical work in sections throughout the year. This work is given, as far as possible, in close relation to the instruction in each subject, and the time assigned is proportioned to the importance of the subject. The minimum assignment is *twenty-four hours*—in the special subjects of the first period. This is supplemented in the second and third periods by further clinical work in those subjects that the student elects. The clinics in Clinical Medicine and Clinical Surgery extend throughout the year. The other clinics include the subjects of :—

Neurology ; Children's Diseases ; Pulmonary Diseases ; Orthopedic Surgery ; Abdominal Surgery ; Clinical Gynaecology ; Otology ; Dermatology ; Electro-Therapeutics ; Genito-Urinary Diseases ; Medico-legal autopsies.

ELECTIVE SUBJECTS

Elective subjects are classified according to the amount of time occupied by each course. Twelve hours of lectures or clinics constitute one point. Each student is required to choose 4 points of electives.

The elective courses for the session 1911-12 are classified as follows :

Neurology	3 points	Otology	2 points
Laryngology	3 points	Pathological Technique .	2 points
Clinical Gynecology . . .	2 points	Gastro-Intestinal Diseases	1 point
Dermatology	2 points	Pulmonary Diseases . . .	1 point
Genito-Urinary Diseases .	2 points	Mental Diseases	1 point
Ophthalmology	2 points	Rectal Diseases	1 point

The examination in an elective subject lasts one, two, or three hours, according as the course counts one, two, or three points.

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* Clinical lectures are given at the hospitals connected with the School.

Summary of Time

First Year	1100 hours
Second Year	1100 hours
Third Year	1050 hours
Fourth Year	1150 hours
Total	4400 hours

EXAMINATIONS

1. For Entrance

Examinations for admission may be taken in June at any of the places announced by the College Entrance Examination Board (for a list and application forms, address the Secretary of the Board, P. O. Sub-station 84, New York, N. Y.); or in September at Tufts College, Mass.

2. Promotion

The regular examinations for promotion and for graduation are held at the end of each course.

3. Fall Examinations

The fall examinations will commence Monday, September 8, 1913, at 10 o'clock A.M., at the Medical School Building, and are given for the following purposes: —

(*a*) For students from other medical schools applying for advanced standing.

(*b*) For the removal of conditions (other than entrance.)

Students intending to take the fall examinations (other than for entrance) are required to notify the Secretary on or before Saturday, Aug. 30, 1913.

In all examinations (except those for entrance) each student must register by signing his name to the registration blank provided for that purpose. If a student fails to register in this manner he shall receive no credit for that examination.

Subjects of Instruction

First Year Subjects

ANATOMY

The course in anatomy is given throughout the first year. During the first half-year there are five lectures and three recitations weekly with the class. In the month of October, thirty hours additional are devoted to demonstrations in Osteology. There are also special demonstrations by the instructors in the difficult parts of the work. In the dissecting room each student is required to dissect three parts, to the satisfaction of the Demonstrator of Anatomy, before taking the final examination. It is necessary for every student to dissect. three parts before graduation. Record of attendance and of the quality of the work done in the dissecting room will be kept, and will largely determine the standing of the student in the class.

During the second half-year there are two exercises each week, one hour for applied surgical anatomy and one hour for applied medical anatomy.

PHYSIOLOGY

The course in physiology is given throughout the latter half of the first year. It constitutes half of the entire work required of the student during that period. The course consists of four recitations, four lectures, six hours of laboratory work, and one conference for every student, each week, together with the preparation of a technical written paper, and extra demonstrations. At the end of each month there is an important written examination.

In the recitations, familiarity with the subject-matter of an assigned text-book of physiology, and of the syllabus, is required. The lectures set forth the principles of general and descriptive physiology, and suggest some of its relations to the allied sciences, especially anatomy. In the laboratory the student has opportunity to acquire a degree of technical skill in the use of instruments and apparatus, demonstrating for himself meanwhile some of the most important facts of biological function, a specialty being made of an acquaintance with the nature of protoplasm. A strict practical examination may be held at the end of the year in the laboratory. The conferences give each student opportunity to become familiar with the literature on important interesting physiological topics, which are then presented in written reports and freely discussed by the whole class. Record both of the attendance and of the quality of the work done in the laboratory and recitation-room will be kept, and, with the conference, will largely help to determine the standing of the student in the class. In addition, a three-hour written examination covering the entire work of the year is held at the completion of the work, besides the important subsidiary written examinations, monthly, and weekly written tests.

Advanced and research work in physiology will be provided for competent students, by special arrangement with the head of the department. Work in this department is also offered to candidates for the degree of Master of Arts. The constant aim is to adapt the work of each student both to his needs and to his capabilities.

HISTOLOGY

The work in histology covers the second half of the school year, and is both didactic and practical. The practical work in the laboratory is emphasized. Here the student comes into the most intimate relation with the elements of the body, the legitimate objects of his study. He learns to use the microscope and to manipulate sections. Being required to draw what he sees, he forms a mental picture of the objects of study which he never forgets.

The department aims to bring before the student the latest utterance of the best authorities, and to present the subject from the standpoint of the medical student. It must be obvious that histology, dealing as it does with the tissue elements of the body in their normal condition, is vitally important in the study of pathology, when it is understood that it is morbid changes in these elements which constitute pathological conditions. The student's future study of pathology is kept constantly in mind, and the teaching of the department has a direct bearing upon that end. The department is furnished with microscopes, the use of which, on payment of a small fee, will be afforded to such as are unable to furnish instruments of their own.

Written exercises and recitations will form a part of the course. Ninety hours of laboratory work are required.

Second Year Subjects

PATHOLOGY

The work in pathology and bacteriology will occupy the attention of the students during the first half of the second year. The instruction in pathology will consist of lectures, recitations, demonstrations, and practical laboratory work. It will be the aim to develop in the student a thorough knowledge of the causes, course, and results of pathological processes. Daily lectures (five times a week) will be supplemented by daily recitations, based upon a syllabus covering the subjects of general pathology and special pathology.

Demonstrations of gross pathological specimens, obtained from operations and autopsies at the Boston City Hospital, the Massachusetts General Hospital, and other institutions, will be held frequently, as material is obtained. The supply of fresh material is very large, and it is usually possible to illustrate all of the common disease processes and many of the rare lesions, during the time when the class is at work. Instruction in autopsy technique will be given in the amphitheatre of the School.

The work in pathological histology will include a three-hour exercise daily, five times a week. Students will mount and make drawings of sections obtained from human and experimental lesions, comprehending all the important subjects of general and special pathology. Considerable attention will be paid to surgical pathology. Preserved gross specimens illustrating the lesions studied will be demonstrated in connection with the laboratory exercises.

Written recitations will be held, without notice, at irregular intervals throughout the term. The standard attained by the student in these exercises will influence his final mark in the subject. Final examinations will be held at the end of the year, three hours of written and two hours of practical work. A report on gross specimens may be included.

Microscopes will be loaned to students for a small fee.

BACTERIOLOGY

Bacteriology is taught as a companion study with pathology. As infectious processes are taken up, the bacterial causes are studied in connection with the pathology of the diseases which they produce, in such a way that a comprehensive view of the cause and effect may be obtained. Attention is paid to the technical details of laboratory work. The methods of bacterial action, the elaboration of toxines, the subject of immunity, and the important bearings of asepsis, antisepsis, and disinfection are especially emphasized. Particular attention is also paid to all practical bacteriological tests used in medicine.

The bacteriological laboratory presents adequate facilities for the intelligent demonstration of this subject. In addition to the usual laboratory work, facilities are afforded students for individual work. In connection with the demonstration of gross pathological specimens, a study of bacteria present is made, both by smear and culture. The recitations in this subject will include both oral and written exercises, and practical examinations will be held throughout the year.

The final examination will consist of two hours of written and one hour of practical work. The practical examination will consist of the examination of an unknown specimen, requiring the application of a bacteriological test of clinical value.

EMBRYOLOGY

The subject of Embryology is given in the first half of the second year with three weekly exercises. The work will cover the science so far as to fit the student with knowledge sufficient for his studies in obstetrics and such other departments as may have to do with embryonic conditions. It is intended to give the student such practical features of the subject as will prove adequate for his needs as a student of medicine, without entering into the many details that tend to confuse and are not essential outside a regular course in biology.

PHARMACOLOGY

Instruction in pharmacology consists of lectures, recitations, and laboratory exercises, twelve hours a week throughout the second half-year. Especial attention is given to the physiological action of drugs in its relation to their therapeutical application, and to the relation always existing between therapeutics and physiological and pathological laboratory work. The laboratory course is designed to familiarize the student with all medicinal preparations and processes, and consists of exercises in which the class in sections is led to this result practically.

Prescription writing and the metric system will receive careful attention. Such of the recent additions to *materia medica* as are deemed worthy will be properly considered.

CHEMICAL PATHOLOGY

The course follows the general plan of the first year work in Chemical Physiology. Pathological secretions and excretions are studied in comparison with the normal. Special attention is given to the chemistry and microscopy of urine, feces and gastric contents. These subjects occupy a large part of the laboratory exercises.

Diagnosis of renal, gastric and intestinal diseases from chemical and microscopic findings is fully considered in both lectures and recitations.

OPTIONAL COURSE

Research Work in Chemical Biology. Students must obligate themselves to spend at least a half-year, and write a thesis upon the result of their investigation. This course is similar to that given in the Graduate School for the degree of Master of Arts.

TOXICOLOGY

The lecture and laboratory course in Toxicology is systematic and comprehensive. Students are required to determine the identity of various organic and inorganic poisons in stomach contents, tissues and in food.

In addition to the regular recitations, occasional conferences are held, at which cases of poisoning are discussed.

PHYSICAL DIAGNOSIS

This is an elementary course in the study of physical signs in health and disease, and is the foundation for the study of Clinical Medicine Special attention is given, in the explanation of physical signs, to the principles of physics, and to the facts of anatomy and physiology upon which they are based. The course follows the instruction in Medical Anatomy, part of the course in Applied Anatomy of the first year, and leads to the course in Medical Diagnosis in the third year. The course consists of one lecture a week throughout the second year (thirty-two lectures), and fifteen exercises in sections, chiefly on elementary percussion and auscultation.

BANDAGING AND SURGICAL TECHNIQUE

Bandaging and surgical technique is given to students of the second year, and consists of practical work in applying bandages, dressings, splints, etc. The course is preceded by lectures and demonstrations by the Demonstrator of Bandaging and Apparatus. Upon the conclusion of the lectures, each student receives individual instruction in the subject, and must show himself skilled in this work before completing the course.

During the second semester a series of lectures will be given upon surgical technique.

The course is a part of the work in Surgery.

Third Year Subjects

THEORY AND PRACTICE OF MEDICINE

The work prescribed in the department of general medicine has been carefully planned. As the studies of the second year are intended to prepare the student for the study of the theory and practice of medicine, so this course is intended to prepare for the clinical courses of the fourth year. To this end a systematic series of lectures is offered, including such general diseases as are not considered in the special courses. Two hours a week are devoted to these lectures. They comprise a detailed description of each of the diseases under consideration. The diseases are discussed upon the uniform plan of a description of the affection, its synonyms, history, cause, pathological changes, symptoms, complications, diagnosis, prognosis, prevention and treatment. Supplementary to these lectures, a weekly quiz class is held. By such thorough and systematic study of the diseases he is to meet in the clinical work of the fourth year, the student is prepared to appreciate in the fullest degree the varying phenomena of daily practice.

SURGERY

The course in surgery of the third year consists of lectures covering the principles of general surgery, attendance at clinics, recitations, and written quizzes. The instruction in this year prepares the student for the courses of the fourth year in clinical, abdominal, rectal, genito-urinary, gynecological, and orthopedic surgery.

The class attends the lecture in clinical surgery at the Boston Dispensary, one morning each week from October 1 to April 1, where the time is principally devoted to demonstrating from the case the various conditions which a practitioner meets in general practice. So far as possible, cases are grouped, and one morning of each week is devoted to the consideration of a single subject, with many cases illustrating the condition under discussion.

The class, divided into small sections, attends the regular surgical clinics of the School each week throughout the school year at the Boston City Hospital, the Boston Dispensary, the Carney Hospital, and the Grace Hospital.

At some time after the course in bandaging and surgical technique, but before graduation, each student must present a certificate stating that he has served satisfactorily as surgical dresser for at least one month in some institution approved by the Faculty. All students who have not already taken the course in bandaging must make arrangements with the demonstrator to complete this course before January 1 of the third year.

LARYNGOLOGY

Instruction in the diseases of the nose and throat is both didactic and clinical. A systematic course of lectures is given to the third-year students in the ampitheatre of the School. These lectures are illustrated with colored diagrams, models, pathological specimens, and the exhibition of instruments. The opaque-projection apparatus is used at the close of each lecture.

Clinical instruction in laryngoscopy and rhinoscopy is given to small sections of the class at the Boston Dispensary, the Boston City Hospital, and the Carney Hospital. This work is required.

An elective course, mainly practical, is given to the fourth-year students during the last half-year. Special attention is paid to the technique of instrumentation, also to general diagnosis and treatment. By the actual examination of cases the student is made familiar with the diseases the family physician is expected to treat. During this course the students see the most important operations of the nose and throat. Practical lectures are given at the School. The class visits, in sections, the laryngological clinics at the Boston Dispensary, the Boston City Hospital, and the Carney Hospital.

NEUROLOGY

The Department of Neurology is under the direction of Dr. Thomas, and the courses embrace in their scope required and elective work.

The work of the third year is required and consists of:

(1) Didactic lectures and recitations, once a week during the first half year by Dr. Stearns.

(2) Lectures on the anatomy, physiology, and pathology of the nervous system are given at the Medical School once a week during the second half year by Dr. Tower, supplemented with instruction by sections in the laboratory in the microscopical examination of the normal and pathological nervous system.

OPHTHALMOLOGY

The course in ophthalmology will be of the most practical character possible, being designed to give the general practitioner such knowledge of the subject as is most essential to his practice. The lectures will be given once a week, the first half of the school year. For clinical work the class will be divided into small sections, preparatory to instruction at the Massachusetts Charitable Eye and Ear Infirmary. The fourth-year elective students will be given personal instruction by members of the department throughout the school year. Instruction in operative work will be given in small sections at the Infirmary.

OBSTETRICS

The instruction in obstetrics consists of lectures, recitations, conferences, and clinical teaching. Lectures are illustrated by plates and the use of the manikin. Each student is given the opportunity to serve as externe in one of the Obstetric Out Patient departments, where he personally delivers the six cases required for the degree. He is required to care for these cases during their convalescence and to write a detailed report of each case. A large majority of each class deliver more than four cases and witness the common obstetric operations.

PULMONARY DISEASES AND CLIMATOLOGY

A chair of pulmonary diseases and climatology was established some years ago, and Dr. Edward O. Otis, Physician to the Free Home for Consumptives, and the tuberculosis department of the Boston Dispensary, formerly president of the American Climatological Association, was elected head of this department. Medical climatology will receive special attention in relation to the climatic treatment of tuberculosis. The methods of sanatorium treatment will be discussed, and one or more sanatoriums visited during the year. "The tuberculosis class," "the day camp," and other modern methods of treating tuberculosis are also given attention.

A limited number of students of the fourth year who desire to assist at the tuberculosis clinic of the Boston Dispensary will have opportunity to do so, and should apply to Dr. Otis. In this department special attention is devoted to pulmonary tuberculosis, concerning which instruction is given, both by didactic and clinical lectures, to the students of the third and fourth years. Special clinical instruction, with opportunities for the physical examinations of patients, will be given to the students of the third and fourth classes, in small sections, at the clinic for pulmonary diseases in connection with the Boston Dispensary, the out-patient department of the Boston Consumptive Hospital, and the Mt. Sinai Hospital. The detection, treatment, and prevention of pulmonary tuberculosis will be thoroughly studied in this class.

GENITO-URINARY DISEASES

The required course in Genito-Urinary Diseases will commence in the second half of the third year, when the didactic lectures in this subject will be given. Clinical instruction will be given during the first period of the fourth year.

GYNECOLOGY

Instruction in gynecology is given both by lectures and clinical teaching. Lectures are given to the third-year students twice a week during the second term. Once a week a quiz is held on the lectures.

CHILDREN'S DISEASES

The work of the third year consists of lectures on chosen subjects and clinical lectures covering the common diseases of childhood two hours a week throughout the year. Clinical instruction is given in sections at the Out-Patient Department of the Boston Dispensary. Each section works for one month and is taught by required practical work with patients in diagnosis and treatment. The clinical laboratory work helpful in diagnosis is done at the clinic in connection with the physical examination of patients. During the year the class will be taken to a model farm where all the practical points in the proper care of milk for infants will be demonstrated. Contagious diseases are presented to the class in sections at the South Department of the Boston City Hospital. When possible, at these visits to the contagion wards of the hospital, the technique of intubation will be shown.

MEDICAL DIAGNOSIS

The instruction in Clinical Medicine during the third year is given under the head of Medical Diagnosis. The course continues throughout the third year. One clinical lecture each week is given at the Boston City Hospital, illustrating the subject. In addition the class, in sections, attends ward visits and medical clinics. An important part of this clinical work is given under the supervision of the Department of Pulmonary Diseases, and in district visits under the supervision of physicians of the Boston Dispensary. The work in this course is closely correlated with the course in Theory and Practice.

HYGIENE AND SANITATION

Hygiene and sanitation are taught during the third year.

The principal subjects of the course are air, water (public and private), and food supplies.

The transmissible diseases, and their epidemiology, industrial hygiene, and the inspection of work-shops and factories, house construction, heating, ventilating, and plumbing, care of family wastes, and the disposal of sewage.

Railroad sanitation, military and naval hygiene, quarantine, disinfection and fumigation. National and State laws relative to health officers, and the protection of the public health.

The inspection of schools.

Burial of the dead, and vital statistics.

HEMATOLOGY

The course in hematology consists of sixteen lectures and twelve two-hour laboratory exercises, — forty hours in all for each student during the second semester of the third year,—with occasional clinical lectures at the Boston City Hospital. It is given as a sub-department of Clinical Medicine, and it is the aim to adapt it to the needs of the future practitioner. The lectures deal with diseases of the blood from a clinical as well as from a laboratory standpoint. The first laboratory exercises consist of preliminary instruction in the technique of blood examination, followed by practical work in blood pathology. A permanent collection of some three thousand microscope slides and a number of excellent wall-charts are also available.

Fourth Year Subjects

CLINICAL MEDICINE

The aim of the work in Clinical Medicine is to give the student a practical acquaintance with disease. The instruction in this department begins with Medical Anatomy (part of the course in Applied Anatomy), in the second semester of the first year. Then follow the course in Physical Diagnosis in the second year and the course in Medical Diagnosis in the third year. The fourth-year course in Clinical Medicine is a continuation and further development of this work.

The instruction consists of two clinical lectures at the Boston City Hospital, one clinical lecture (Pulmonary Diseases) at the Boston Dispensary, and two hours at the School. One of these latter hours is given to conferences on cases which the students have studied, and the other is given partly to instruction in practical therapeutics and dietetics, and partly to exercises in conjunction with the Department of Pathology on clinical pathology, — the clinical and pathological study of actual cases.

In addition, abundant opportunities for clinical study are offered, in ward visits and other medical clinics. This instruction is given chiefly at the Boston City Hospital, the Boston Dispensary, and the Free Home for Consumptives. The work in Pulmonary Diseases in the fourth year is regarded as part of the course in Clinical Medicine.

The marks throughout the various courses of the Department of Clinical Medicine are based on practical work and the report of cases, as well as on written examinations.

CLINICAL SURGERY

The Department of Clinical Surgery has been reorganized. Dr. William Merritt Conant, Visiting Surgeon at the Massachusetts General Hospital, has been appointed Professor of Clinical Surgery; and Dr. William Allen Brooks, Jr., Chief of the Surgical Staff at St. Elizabeth's Hospital, has been appointed Assistant Professor of Clinical Surgery. The efficiency of the department has been greatly augmented by these appointments, by which a wide range of major clinical and operative surgery is added to the teaching facilities in general surgery. The work of the fourth year consists of lectures, conferences, attendance at clinics and operations. The class in small sections attends clinics at the Massachusetts General Hospital, St. Elizabeth's Hospital, the Grace Hospital, and the Boston Dispensary. At these clinics students have opportunity for examining and studying cases; become practically familiar with diagnosis and treatment, and see a large number of surgical operations, both major and minor. Students in this class also have opportunities for administering ether and assisting at operations.

OPERATIVE SURGERY AND SURGICAL ANATOMY

The work in operative surgery has been enlarged by the addition of a course in surgical anatomy, given by the department of anatomy in conjunction with the department of clinical surgery. This course, which includes three exercises a week for five weeks, consists of demonstrations of surgical landmarks upon the living model, the skeleton, and the cadaver, and a review of anatomy in general. Especial emphasis is laid upon that part of anatomy which is important in operative surgery.

Regional anatomy is demonstrated, and at the conclusion of the review given by the department of anatomy the important surgical operations of the region under discussion are demonstrated by members of the surgical staff. Thus surgery of the neck is first treated from the standpoint of surgical landmarks, pointed out upon the living model, the skeleton, and the cadaver. The surgical anatomy of the neck is then demonstrated on the cadaver, and at the conclusion of these exercises by the Department of Anatomy, the important surgical operations of the neck are demonstrated by members of the Department of Surgery.

The same course is pursued with all parts of the body, and at the conclusion of the anatomical teaching concerning any region, the special operations of that region are demonstrated by members of the surgical staff.

At the conclusion of the course the class is divided into small sections, and each section performs the various operations upon the cadaver in the dissecting room. Each section is supervised by an instructor.

The course in operative surgery and surgical anatomy as above outlined is a part of the required work in clinical surgery.

NEUROLOGY

The Neurology for the fourth-year class is both required and elective. The required courses consist of clinical and didactic lectures by Dr. Thomas; clinical exercises by Dr. Fairbanks, in sections, at which instruction is given in methods of examination of the patient, and diagnosis of the diseases of the nervous system; and clinical conferences, at which the student makes a written report of a case which he has himself studied and diagnosed. The report is then discussed by the class and the instructors.

There will also be given the fourth year class lectures on the principles of psychotherapy, as well as a series of lectures on psychology in its medical bearings.

The elective course consists of clinical exercises by Dr. Thomas. In these clinical exercises the student has an opportunity to examine and study the patient for himself, thus becoming experienced in the methods of examination, and acquainted with nervous diseases as present in the subject.

The lectures and exercises are given at the Boston City Hospital during the first half of the school year.

MENTAL DISEASES

Instruction in mental diseases will be afforded by a course comprising didactic and clinical lectures, to be given weekly from January to the middle of May. Ten or more clinics will be held at the Boston State Hospital, where a large number of patients are received annually. Two clinics will be given also at the Massachusetts School for Feeble-Minded, at Waverley. It will be the aim of this course to allow the students to become familiar with the prevalent forms of mental trouble, the early symptoms of insanity, and with the methods of commitment. Especial attention will be given to mental defects in children.

CHILDREN'S DISEASES

The fourth year work in Children's Diseases consists of one exercise a week throughout the year in case teaching, infant feeding and the feeding of delicate children. Three exercises a week of two hours each are given students in sections at the Children's Hospital of the Boston Dispensary. The work includes special instruction in the food laboratory, the study of clinical cases from the ward and ward visits. Contagious diseases are presented to the class in sections at the South

Department of the Boston City Hospital. When possible, at these visits to the contagion wards of the hospital, the technique of intubation will be shown.

PATHOLOGICAL TECHNIQUE

The course in pathological technique is offered to students of the fourth year. It is intended to develop in the student a special familiarity with the diagnostic tests which are used in pathological and bacteriological work. The course will include studies of pathological products from the standpoint of rapid diagnosis, as the preparation of free-hand and frozen sections, together with the rapid celloidin imbedding of fresh tissue; training in methods of description and the preparation of protocols; special bacteriological tests, notably the opsonin test and the preparation of vaccines; the study of agglutination by Wright's method; inoscopy, cytodiagnosis, etc.

This course is expected to be of particular value to students who intend to obtain house-officerships in small hospitals where regular pathological appointments are not made.

MEDICAL JURISPRUDENCE

In most institutions instruction in legal medicine is limited to those subjects which prepare the graduate for the work of the medical examiner or coroner, in spite of the fact that only a small number of practitioners ever have opportunity to exercise these functions.

The course which will be offered to the fourth-year class is intended to be broader in scope and it will include:

Instruction of the rights and duties of the physician in court, by Justice William Schofield, of the Superior Bench of Massachusetts.

A study of the legal relations of the physician to the public, to the profession, and to his patients, by Dr. F. J. Keleher member of the Boston Bar.

Instruction in the duties of the medical examiner, illustrated, by practical demonstration of medico-legal cases by Dr. Leary.

ORTHOPEDIC SURGERY

The work in orthopedic surgery consists of one lecture, four clinics, and one quiz each week of the first half-year, and of two exercises a week at the Carney Hospital during the second half-year, for those electing the subject. The work of the second half-year consists of practical exercises in diagnosis and treatment in the out-patient department, and of ward visits, with opportunity to see the operative work, especially the orthopedic surgery of the adult.

OTOLOGY

Instruction in otology consists of lectures on the anatomy, physiology, and pathology of the ear, at the Massachusetts Charitable Eye and Ear Infirmary. These lectures are illustrated by Politzer's charts of the human ear, models, anatomical specimens of the temporal bone, bone-corrosion preparations, and microscopical sections of the organ of hearing.

Clinical and practical instruction in otology is given to small sections of the class at the close of each lecture. The students witness the examination and treatment of patients, are invited in class sections to be present at the major operations upon the ear, and to accompany the aural surgeon in his daily rounds through the wards.

An elective course for the fourth-year students consists of clinical work at the Massachusetts Charitable Eye and Ear Infirmary and the Carney Hospital.

DISEASES OF THE RECTUM

The course in diseases of the rectum will consist of weekly lectures during the first half-year at the School, and clinical instruction every morning at the rectal department of the Boston Dispensary. Each student will have ample opportunity to examine patients, and in suitable cases to apply treatment. Especial attention will be paid to so-called "office treatment" of this class of diseases.

DERMATOLOGY

The instruction in dermatology will consist of weekly lectures to the fourth-year students from January to April. Also, from January to June, there will be three weekly clinics at the Boston Dispensary, where cases of skin diseases will be shown to the class, with an opportunity for each student to examine the cases personally.

GENITO-URINARY DISEASES

Clinical instruction in genito-urinary diseases is given at the genito-urinary department of the Boston Dispensary. All the students of the fourth year are required to attend the clinic in sections permitting individual instruction, during the first semester, and are taught the chief points of modern genito-urinary technique. Students electing this course receive additional instruction in sections during the second semester. As the number of patients attending this clinic is very large, each student has an opportunity to see many cases of genito-urinary diseases and to become familiar with their diagnosis and treatment.

ELECTRO-THERAPEUTICS

The course in electro-therapeutics given to the fourth-year students will consist of twelve lectures, with occasional quizzes. It will include a brief review of the principles of electro-physics, the nature, methods of production, and physiological action of the various forms of electrical energy, together with a brief discussion of therapeutic uses and limitations.

CLINICAL GYNAECOLOGY

The first essential being the ability to make an exact diagnosis, the students of the fourth-year class, in sections of two students only, are given abundant opportunity to make physical examinations under proper supervision. The daily clinics (morning and afternoon) of The Dispensary for Women, of the Boston Dispensary, the Tremont Dispensary, Carney Hospital, St. Elizabeth's Hospital, and Mount Sinai Hospital provide a course in methods of diagnosis and treatment superior to any other in New England. Adequate provision is also made for students to witness operations in plastic and major pelvic surgery.

CLINICAL TUBERCULOSIS

A special elective course in clinical tuberculosis is given to the fourth-year class by Professor Otis during the months of January, February, and March. It will pay special attention to the early stages of the disease, and will deal generally with the diagnosis, prognosis, treatment, and prophylaxis of pulmonary tuberculosis. There will be at least twenty-five clinical exercises, and a required essay, or examination.

Preparation

Prospective students who have completed the preparation required for admission to the Medical School are advised, if they feel able to give the necessary time, to take a year of college work before entering upon distinctively medical studies, in order to obtain a more thorough foundation and to become familiar with the laboratory methods which form the basis of the work of the first two years of the medical course.

The School of Liberal Arts of Tufts College offers to such students a special course indicated below. This course is open only to students who have fully met the requirements for admission to the Medical School being supplementary to the regular preparation, and not in any sense a substitute for it.

1. Biology 3. Two lectures and four hours of laboratory work each week upon the structure and development of selected vertebrate types. The forms studied in the laboratory are the dogfish, salamander, and cat, with some microscopic work on embryos and tissues, and the study of skeletons of several animals.

2. Chemistry 1. Two lectures and six hours of laboratory work each week. The lectures cover general theoretical and descriptive inorganic chemistry. The laboratory work is devoted to the principal elements and their compounds.

3. English 1 and 2. Three hours a week of instruction in composition and rhetoric.

4. German or French.

5. Elective.

TEXT-BOOKS

[For the session 1912-13]

The first book mentioned is preferred as a text-book, the others being recommended as collateral reading.

Anatomy. — Piersol, Gray, Morris, Cunningham, Eisendrath, Sabotta, McMurrich, Spatheholz, Cunningham's Manual of Dissection.

Bacteriology.—Syllabus, Park and Williams, Hiss and Zinsser, Jordan Muir and Richie, McFarland, Abott, Lehmann and Neumann, Sternberg.

Chemical Pathology.— Hammarstein's Physiological Chemistry, Well's Chemical Pathology, Ogden's Clinical Examination of the Urine, Purdy's Practical Urinalysis and Urinary Diagnosis, Simon's Physiological Chemistry, Wood's Chemical and Microscopical Diagnosis, Holland's Medical Chemistry and Toxicology.

Children's Diseases—Holt's Diseases of Infancy and Childhood, Kerley's Treatment of Children's Diseases, Sach's The Nervous Diseases of Children, Morse's Case Histories in Pediatrics.

Clinical Gynaecology.—Dudley, Garrigues.

Clinical Medicine.—Osler's Practice of Medicine, Wood and Fitz's Practice, Ander's Practice of Medicine, Forscheimer's Prophylaxis and Treatment.

Clinical and Operative Surgery. — Brewer, International Text-book, American Text-book, Wharton and Curtis, Roberts, Stimson on Fractures and Dislocations, Scudder on Treatment of Fractures, Binney's Operative Surgery, Treves's Surgical Anatomy, Crandon's Surgical After-Treatment.

Dermatology.—Hyde and Montgomery's Diseases of the Skin, Duhring; Stelwagon, Crocker, Kaposi, Besmer.

Diseases of the Rectum.—Kelsey, last edition; Tuttle, Gant, second edition.

Gastro-Intestinal Diseases.—Riegel, Boas, Kemp (of the Stomach), Boas, Ernhorn (of the Intestines).

Genito-Urinary Diseases.—Keyes, Morton, Taylor, Greene-Brooks.

Gynaecology.—Dudley, Kelly, Reed.

Hematology.—Cabot's Clinical Examination of the Blood.

Histology.—Syllabus, Böhm and Davidoff, Stohr, Ferguson, Bailey, Schäfer's Essentials.

Hygiene.—Bergey, Principles of Hygiene; Egbert's Hygiene and Sanitation.

Laryngology.—Coakley, Knight, Kyle, Shurley, Ballenger.

Materia Medica and Therapeutics.—Hare, Sollman, Cushing-Thornton's Dose Book and Manual of Prescription Writing.

Medical Diagnosis.—Musser's Medical Diagnosis.

Medical Dictionary.—Gould, Dunglison, Dorland.

Mental Diseases.—Brower and Bannister's Practical Manual of Insanity, Diefendorf's Clinical Psychiatry, Berkely's Mental Diseases, Wood's Reference Handbook, article on Insanity, Clouston's Clinical Lectures on Mental Diseases, Tuke's Dictionary of Psychological Medicine, E. Regis's Practical Manual of Mental Medicine, Wm. A. White's Outlines of Psychiatry.

Neurology.—Oppenheim, Church and Peterson.

Obstetrics.—J. W. Williams' Text Book of Obstetrics (third edition).

Ophthalmology.—Fuch, Swanzey, May.

Orthopedics.—Whitman's Orthopedic Surgery (fourth edition), Bradford and Lovett, Goldthwait, Painter and Osgood.

Otology.—Bacon's Manual of Otology.

Pathology.—Syllabus, Stengel, Ziegler, Coplin, Mallory and Wright's Technique, Durck's Pathological Histology, Cohnheim. Green, American Text Book

Physical Diagnosis.— DaCosta's Physical Diagnosis, Ander's Physical Diagnosis.

Physiology.—Syllabus, Dearborn's Text-Book of Physiology, Howel, Landois, Verworn, Schäfer, Morat, Hutchinson, McFarland's Biology.

Practice of Medicine.—Osler, Tyson, Forscheimer's Prophylaxis and Treatment, Anders's Practice of Medicine, Thompson, Strümpell, Eichhorn.

Pulmonary Diseases.—Babcock's Diseases of the Lungs, Otis' The Great White Plague, Otis' Treatment of Tuberculosis in Musser and Kelley's Treatment, Kleb's Tuberculosis, Bonney's Tuberculosis and Its Complications.

Surgery.—Brewer, International Text-book, American Text-book, Stimson on Fractures and Dislocations.

Toxicology.—Taylor's Medical Jurisprudence, Peterson and Haine's Legal Medicine and Toxicology, Brundage's Toxicology.

Requirements

FOR ADMISSION TO THE FIRST-YEAR CLASS

Candidates for the Medical School are admitted in two ways:

1. By credentials.
2. By examination.

1. Admission by Credentials

Graduates of high schools, academies, colleges or universities accredited * by the Association of American Medical Colleges, are admitted without examination. These candidates must also present a certificate of proficiency in Chemistry, in Latin, in Physics and in Biology.

2. Admission by Examination

Candidates for admission by examination must have received adequate preparation in certain subjects falling in two groups, known respectively as the Required and the Elective Group.

Fourteen units are required for admission. A unit represents a year's study in any subject in the preparatory school, representing approximately a quarter of a full year's work.

Where the same subject appears listed as elementary, intermediate and advanced, it is to be noted that the units of the higher grades may be added to those of the lower grade. For example, the subject of Advanced Latin presupposes four years' study of the language, and carries credit for four units, two for elementary, one for intermediate and one for advanced Latin.

The Required Group, 9½ Units

Elementary English, 3;
Elementary Latin, 2;
Elementary Physics, 1;
Elementary Algebra, 1½;
Plane Geometry, 1.
Biology, 1

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* The term "accredited" as applied to high schools, academies, colleges and universities means institutions of that type that have been investigated and are accredited by the State University of their respective states, or by the North Central Association of Colleges and Secondary Schools, the Association of Colleges and Preparatory Schools of the Southern States, the Association of Colleges and Preparatory Schools of the Middle States and Maryland, the New England College Entrance Certificate Board, the Association of American Universities, and the Association of State Universities.

Candidates are required to present all the subjects of the Required Group, and a selection of subjects from the Elective Group, aggregating 4½ units, according to the value indicated below.

The Elective Group 4½ Units Required

ELEMENTARY

Greek, 2
French, 2
German, 2
History, 1
Botany, 1
Zoology, 1
Geology and Geography, 1
Mechanical Drawing, 1
Freehand Drawing, 1
Shop Work, ½ to 2
Economics, ½
Anatomy, Physiology, and Hygiene, ½

INTERMEDIATE

Latin, 1
French, 1
German, 1

ADVANCED

Greek, 1
Latin, 1
French, 1
German, 1
History
Algebra, ½
Trigonometry, ½
Solid Geometry, ½

Detailed information concerning the amount and character of the work required in preparation will be found on pages 44 to 65.

Entrance Examinations

Candidates may take the examinations of the College Entrance Examination Board, June 16th to 21st, 1913, at Tufts College or elsewhere. Full information concerning application for such examination may be had by addressing the secretary of the Board, Post Office Sub-Station 84, New York.

Examinations will be given in September at Tufts College, according to the schedule published in the calendar at the beginning of this catalogue. An examination fee of $5.00 is payable at the time of examination, but candidates who subsequently enter the Medical School will not be required to pay the matriculation fee of the first year.

Advanced Standing

Allowance is made for time spent in the study of medicine in other accredited medical schools, but no credit is given for examinations passed in other schools, except by special vote of the Committee on Instruction.

PROMOTION

To Second-Year Class

Students who have passed a majority of the first-year examinations are admitted to the second-year class.

To Third-Year Class

Students of the second-year class who have passed all the first-year examinations, and a majority of the second-year examinations, are admitted to the third-year class.

To Fourth-Year Class

Students who have passed all the studies of the first and the second year, and a majority of the studies of the third year, are admitted to the fourth-year class. No other students are admitted to this class, except by special vote of the Faculty.

GRADUATION

For the Degree of M.D.

Candidates for the degree of Doctor of Medicine must have fulfilled the following requirements: —

1. They must furnish certificates that they are twenty-one years of age.
2. The Faculty must be satisfied of their good moral character.
3. They must have attended four full courses of medical study at some accredited medical college, the last of which shall have been at this School as members of the fourth-year class, and no two courses in the same twelve months.
4. They must have passed all the required examinations, and have performed the required amount of laboratory and clinical work.
5. They must have satisfactorily dissected one-half of the body, under the direction of a demonstrator of anatomy.
6. They must have paid all fees.

CHANGE OF REQUIREMENTS

The Faculty reserve the right to change all requirements without further notice.

HONORS

Students who have attended four full courses of lectures at this School, and have obtained an average of ninety per cent. in their examinations, shall be eligible to "*summa cum laude*."

Students who have obtained an average of eighty per cent. shall be eligible to "*cum laude*," in connection with the degree received.

STANDING AND CERTIFICATES

At the end of each session a certificate of his standing for the year is sent by mail to each student. No marks will be sent or credit given to any student who is in arrears with the Bursar.

FEES AND EXPENSES

A matriculation fee of *five dollars* is payable each year.

A charge of *one hundred and fifty dollars* for tuition is payable in advance. If not paid before November 1, there will be an additional charge of *five dollars*.

If desired, the tuition may be paid in instalments, in which case an additional charge of five dollars is made, and the fees are then paid as follows: —

First payment: — Five dollars for matriculation fee and seventy-five dollars on account of the tuition, a total of *eighty dollars*, payable at the beginning of the first semester.

Second payment: — Seventy-five dollars, the balance of the tuition, and five dollars, the additional charge, a total of *eighty dollars*, payable at the beginning of the second semester, or before February 1.

There is no charge for laboratory supplies. Anatomical material will be supplied at cost.

No student will be admitted to the exercises of the first half-year who has not paid his matriculation fee and at least one half the tuition, and no student will be admitted to the exercises of the second half-year who has not paid his fees in full.

Students leaving the school have no claim for tuition paid.

Students who have failed twice in a subject are required to pay a fee of five dollars for each subsequent examination in that subject.

POST-GRADUATE FEES

Post-graduate fee for graduates of other schools . .	$150.00
Single course	50.00
Post-graduate fee for graduates of this school . . .	60.00
Single course	30.00
Anatomical material	at cost

The Bursar of the College will be at the School, Monday, Wednesday, and Friday, 2.30 to 5.00 P.M., from October 1 to June 1.

There are no scholarships connected with the School.

The expenses of living in Boston need not exceed those in small cities and villages. Good board, including room, heat, and light, can be obtained in the vicinity of the school at from $5.50 to $7 a week. Students will not be allowed to occupy rooms disapproved by the Faculty.

LIBRARIES

The students of this school have free access to the Medical School Library, to the Library of Tufts College, to the Boston Public Library, and to the Boston Medical Library.

The library at the Medical School is open daily from 9.00 a. m. to 5 p. m., except Sundays and holidays. This library is intended to provide *text books for reference*, and the latest editions of all text books used in the school are furnished. These cannot be taken from the Reading Room. In addition, the library contains a large number of reference books in general medicine and general surgery, and in all special branches of each. These works are loaned to the student free of charge, and can be taken out. Complete files of various medical journals provide a valuable addition to the school library.

The Boston Medical Library, which is situated near the School, has one of the largest and most complete collections of medical works in existence. It contains not only bound volumes of every important book in medical literature, but also a very extensive collection of monographs and pamphlets on special subjects. All the leading medical journals are on file for inspection. The Boston Medical Library extends its privileges, under certain conditions, free of charge to students of this School. Its rooms are open daily from Oct. 1 to May 31, from 9.30 a. m. to 10.00 p. m., except Sundays and holidays. The hours on Saturday are from 9.30 a. m. to 6 p. m.

APPLICATIONS

Students who intend to enter the School for the first time must obtain from the Secretary an application blank, which they are required to fill out and return to him. Application blanks will be mailed upon request.

REGISTRATION

Registration is required of all students, each year. *Registration blanks for the session 1913-14 must be filled out and deposited with the Secretary on or before October 4, 1913.* Registration is conducted at the school building only.

Summer Courses

The following subjects are offered during the summer months: —

PHYSIOLOGY

A course in Physiology will be given during the months of June and July by, or under the direction of, the Professor of Physiology. For particulars of the course application should be made to Dr. Dearborn.

HISTOLOGY

A summer course will be given under the direction of the Professor of Histology. Particulars as to the scope of this work, and the fee, may be learned upon application to Dr. Bates.

CHEMICAL BIOLOGY

A summer class in chemical biology is conducted by Dr. Thorpe. This is a laboratory course, and is given in the laboratory of the department of Chemical Biology. For further particulars, apply to Dr. Thorpe.

THE DENTAL SCHOOL

Faculty of the Dental School*

WILLIAM LESLIE HOOPER, A.M., PH.D., ACTING PRESIDENT
Tufts College

HAROLD WILLIAMS, A.B., M.D., LL.D. . . . . . . 528 Beacon St.
DEAN, *and Professor of the Theory and Practice of Medicine*

FREDERIC MELANCTHON BRIGGS, A.B., M.D. . . 31 Mass. Ave.
SECRETARY, *and Professor of Surgery*

CHARLES ALFRED PITKIN, A.M., PH.D. . . . . South Braintree
Professor of Chemistry

FRANK GEORGE WHEATLEY, A.M., M.D. . . . . North Abington
Professor of Materia Medica and Therapeutics

BYRON HOWARD STROUT, D.D.S . . . . Taunton
Professor of Operative Technics and Instructor in Anesthesia

WILLIAM ELISHA CHENERY, A.B., M.D. . . 222 Huntington Ave.
Professor of Diseases of the Nose and Throat and Instructor in Oral Syphilis

WILLIAM RICE, D.M.D. . . . . 16 Arlington St.
Assistant Professor of Clinical Dentistry

GEORGE ANDREW BATES, M.Sc., D.M.D. . . . . . . Auburndale
Professor of Histology

WILLIAM PRESTON HOUSTON, D.M.D. . . . . 419 Boylston St.
Assistant Professor of Clinical Dentistry

EUGENE THAYER, A.M., M.D. . . . 2683 Washington St., Roxbury
Demonstrator of Anatomy

GEORGE VAN NESS DEARBORN, A.M., M.D., PH.D. 6 Mason St.,
Professor of Physiology Cambridge

FRANK ALEXANDER DELABARRE, A.B., D.D.S., M.D.,
Professor of Orthodontia 164 Newbury St.

JOHN WOOD FORBES, D.M.D. . . . . 419 Boylston St.
Assistant Professor of Operative Dentistry

WALTER EMERSON FARRIS, D.D.S. . . . . 711 Boylston St.
Assistant Professor of Prosthetic Dentistry

TIMOTHY LEARY, A.M., M.D. . . . 44 Burroughs St., Jamaica Plain
Professor of Pathology, Bacteriology and Medical Jurisprudence

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* When only street and number are given in the address, the street is in Boston. With the exception of the President, the Dean, and the Secretary, the names are arranged in the order of academic seniority.

ERVIN ARTHUR JOHNSON, D.M.D. . . . . 2 Commonwealth Ave.
Assistant Professor of Clinical Dentistry

HARRY HOMER GERMAIN, M.D. . . . . . 416 Marlborough St.
Assistant Professor of Anatomy

JAMES KELTIE, D.D.S. . . . . 419 Boylston St.
Assistant Professor of Crown and Bridge Work

OLGA CUSHING-LEARY, M.D. . . 17 Grovenor Road, Jamaica Plain
Assistant Professor of Pathology and Bacteriology

CURTIS WILLIAM FARRINGTON, D.M.D. . 228 Huntington Ave.
Assistant Professor of Clinical Dentistry

FRANK EUGENE HASKINS, PH.G., M.D. . . 134 Huntington Ave.
Assistant Professor of Materia Medica and Therapeutics

OTHER INSTRUCTORS

HENRY HILDRETH PIPER, A.B., D.M.D. . . . . . . Gilman Sq.,
Instructor in Clinical Dentistry Winter Hill

CAROLUS AARON FOX, D.D.S. . . . . 419 Boylston St.
Demonstrator of Clinical Dentistry

WALTER SUMNER KENYON, D.D.S. . . . . 301 Westminster St.,
Instructor in Clinical Dentistry Providence, R. I.

IVAN ALEXIS TEOFIL CENTERVALL, B.S., D.M.D. . 2 Park Sq.
Instructor in Clinical Dentistry

CHARLES HARVEY DAVIS, D.D.S. . 24 High St., Pawtucket, R. I.
Instructor in Clinical Dentistry

DANIEL ARTELL NASON, D.M.D. . . . . . 4 Pleasant St., Revere
Demonstrator of Clinical Dentistry

WILLIAM MARTIN FLYNN, D.M.D. . . 474A Broadway, S. Boston
Instructor in Clinical Dentistry

OSCAR EMERY WASGATT, D.D.S. . . . . 413 Boylston
Demonstrator of Clinical Dentistry

GUY MONROE WINSLOW, A.B., PH.D. . . . . 145 Woodland Rd.,
Instructor in Histology Auburndale

ROBERT EATON ANDREWS, A.B., M.D. . . . . 1044 Mass. Ave.,
Assistant in Physiology Cambridge

EDWARD VALENTINE BULGER, D.M.D. . . . 513 E. Broadway,
Instructor in Clinical Dentistry S. Boston

ALLAN JAMES MACDONALD, D.D.S. . . . . . . 16 Arlington St.
Demonstrator of Clinical Dentistry

HOWARD WARDWELL CHURCH, D.M.D. . . . . 471 Hope St.,
Instructor in Clinical Dentistry Bristol, R. I.

WALTER FREEMAN NOLEN, M.D. . . . . 535 Beacon St.
Instructor in Anatomy

CHARLES MARDEN PROCTOR, D.M.D. . . . . . . 15 Beacon St.
Demonstrator of Clinical Dentistry

JOSEPH WILLIAM SHAY, D.M.D. . . . . 238 Warren St., Roxbury
Demonstrator of Clinical Dentistry

WALTER HENRY GRANT, D.M.D. . . . . 107 Massachusetts Ave.
Demonstrator of Clinical Dentistry

JOHN THOMAS WILLIAMS, M.D. . . . . 483 Beacon St.
Assistant Demonstrator of Anatomy

JAMES FRANCIS COUPAL, B.S., M.D. . . . . 2 Center St., Roxbury
Assistant in Histology

GILMORE COLBY DICKEY, D.M.D. . . Upham's Corner, Dorchester
Instructor in Crown and Bridge Work

WILLIAM HENRY EATON, D.M.D. . . . . 419 Boylston St.
Instructor in Clinical Dentistry

HECTOR GEORGE RISEGARI-GAI, D.M.D . . . . 85 Pleasant St.,
Instructor in Clinical Dentistry Dorchester

ALBERT JOHN ADAMS HAMILTON, M.D. . . 409 Marlborough St.
Assistant Demonstrator of Anatomy

ARTHUR HERBERT McINTOSH, D.M.D. . . . . . 8 Cumberland St.
Instructor in Clinical Dentistry

JOSEPH ALOYSIUS MEHAN, M.D. . . . . 4 Park St., Lowell
Instructor in General Chemistry

EVERETT MITCHELL BROWN, D.M.D. . . . 204 Huntington Ave.
Instructor in Operative Technics

WILLARD SAWTELLE DAVIS, D.M.D. . . 1034 Hyde Park Ave.,
Demonstrator of Clinical Dentistry Hyde Park

HAROLD GIFFORD METTERS, D.M.D. . . . 681 Washington St.,
Instructor in Clinical Dentistry Norwood

EDWARD BAILEY BRANIGAN, D.M.D. . . 2 Commonwealth Ave.
Instructor in Clinical Dentistry

WILLIAM HENRY CANAVAN, D.M.D . . . 648 Beach St., Revere
Demonstrator of Extracting and Anaesthesia

HAROLD DUNCAN DARLING, D.M.D. . . . . 110 East River St.,
Instructor in Clinical Dentistry Hyde Park

JOSEPH BENJAMIN ELLIS, D.M.D. . . . . 449 Broadway, Everett
Demonstrator of Clinical Dentistry

ALBERT GEORGE FITZPATRICK, D.M.D. . . . 697 W. Broadway,
Instructor in Clinical Dentistry West Somerville

NAPOLEON JOSEPH GOULET, D.M.D. . . 254 Main St., Marlboro
Instructor in Clinical Dentistry

HUGH CHARLES MAGUIRE, D.M.D. 715 Centre St., Jamaica Plain
Instructor in Clinical Dentistry

GEORGE FRANCIS McINTYRE, M.D. . . . 5 Dana St., Cambridge
Assistant Demonstrator of Anatomy

ARTHUR LINWOOD MORSE, D.M.D. . . . . 151 Market St., Lynn
Instructor in Orthodontia

WALTER WESTWOOD, D.M.D. . . . 9 Bellingham Ave., Beachmont
Instructor in Clinical Dentistry

CHARLES EDWARD WHITNEY, D.M.D. . . . . Milford
Instructor in Clinical Dentistry

EUGENE TODHUNTER VINCENT, D.M.D., M.D. . . . .
Demonstrator of Clinical Dentistry 93 Massachusetts Ave.

NATHANIEL WOODBURY BRAGDON, D.M.D. . . . 21 Maple St.,
Demonstrator of Clinical Dentistry Danvers

WALTER EMERSON BRIGGS, D.M.D. . . 35 So. Main St., Attleboro
Instructor in Clinical Dentistry

JAMES ELLIOTT COX, D.M.D. . . . . . 56 High St., Charlestown
Demonstrator of Clinical Dentistry

JAMES J. DUDDY, D.M.D. . . . . 183 Main St., Brockton
Assistant in Orthodontia

ERNEST WILLOUGHBY GATES, D.M.D. . 27 Myrtle St., E. Dedham
Assistant in Orthodontia

JOSEPH CORNELIUS GETHRO, D.M.D. . . . 848 Washington St.,
Instructor in Clinical Dentistry Norwood

HARRY WINFIELD PERKINS, D.M.D. . . . . . 419 Boylston St.
Assistant in Orthodontia

ROY CHURCHILL SKINNER, A.B., D.M.D., 118 Commonwealth Ave.
Demonstrator of Clinical Dentistry

CHARLES BUTLER WRY, D.M.D. . . . 60 Mountain Ave., Revere
Demonstrator of Clinical Dentistry

JOHN ROYDEN GILBERT, D.M.D. . . . . 681 Main St., Waltham
Assistant in Prosthetic Dentistry

CAROLUS ROY GIVEN, D.M.D. . . . 62 Highland Ave., Somerville
Assistant in Prosthetic Dentistry

FREDERICK EDWARD GRANT, D.M.D. . . Boyden Sq., E. Dedham
Instructor in Clinical Dentistry

LOUIS ALFRED HAFFNER, D.M.D. . . Central Building, Lawrence
Assistant in Orthodontia

FRANCIS RANDOLPH HENDERSON, D.M.D. . . . 65 Clark St., Everett
Instructor in Clinical Dentistry

EDWIN JOHN MORSE, D.M.D. . . . . 541 Boylston St.
Instructor in Prosthetic Dentistry

RENE LUCIEN PETZOLDT, D.M.D. . . . . . 64 West Newton St.
Demonstrator of Clinical Dentistry

FRANCIS WHITE REGAN, D.M.D. . . . . 2 Park Sq.
Demonstrator of Clinical Dentistry

MAX ROSENTHAL, D.M.D. . . . . 2 Park Sq.
Demonstrator of Clinical Dentistry

WILLIAM LADD MOODY, D.M.D. . . . . 149 Tremont St.
Instructor in Clinical Dentistry

GEORGE ALLEN SPRINGALL, D.M.D. . . . 442 Main St., Malden
Assistant in Orthodontia

WILLIAM CHARLES TANNEBRING, D.M.D. . . . 163 Cabot St., Beverly
Instructor in Clinical Dentistry

KARL AUDREY BOHAKER, D.M.D. . . . . 419 Boylston St.
Assistant in Orthodontia

HARRY AUGUSTUS GREENE, D.M.D. . . . . . 23 Magazine St., Cambridge
Instructor in Clinical Dentistry

ARTHUR WARREN HAYES, D.M.D. . . . . 106 Market St., Lynn
Assistant in Orthodontia

WILLIAM REUBEN MESSER, D.M.D. . . . . 551 Boylston St.
Assistant in Orthodontia

HARRY CLIFFORD RYDER, D.M.D. . . . 267 Center St., Dorchester
Instructor in Clinical Dentistry

HAROLD WOODBURY SHEDD, D.M.D. . . . 815 Washington St., Newtonville
Instructor in Clinical Dentistry

ALFRED SELDON WASS, D.M.D. . . 109 Highland Ave., Somerville
Instructor in Clinical Dentistry

OTHER OFFICERS

EDMUND WILBUR KELLOGG . . . . 24 Milk St., Boston
Assistant Treasurer

EUGENE EVERETT SHEPARD . . . 43 Boston Ave., W. Medford
Bursar

LINA A. MAYO . . . . Milton
Stenographer

LILLIAN M. TATTAN . . . . Somerville
Clerk to Secretary

MARY WRIGHT RICHARDSON . . . . . 19 Brighton Ave., Allston
Clerk of the Department of Clinical Dentistry

SARAH ELIZABETH MILLER . . . . 7 Haviland St.
Clerk of the Department of Prosthodontia

FRANCES WILDER . . . . 75 Rutland St.
Matron of the Department of Anesthesia and Extraction

THERESA E. STUBBS . . . . 7 Sussex St.
Clerk in Department of Crowns and Bridges

STANDING COMMITTEES OF THE DENTAL SCHOOL

The Dean and the Secretary are members of all Committees, *ex officiis*
ADMINISTRATION.—The President, Drs. Bates and Johnson
ADMISSION.—Drs. Leary, Bates, Dearborn and Professor Wren
LIBRARY.—Drs. Bates and Houston
INSTRUCTION.—Drs. Johnson, and Bates
CATALOGUE.—Drs. Bates and Dearborn
WOMEN'S ADVISORY COMMITTEE.—Drs. Elizabeth A. Riley, Olga Cushing-Leary and Edna Weil-Dreyfus

LABORATORY ASSISTANTS

Anatomy

WILLIAM E. BROWNE . . . . Boston
HENRY B. ELKIND . . . . Worcester
WILLARD L. WRIGHT . . . . Keene, N. H.
WINTHROP ADAMS . . . . Cambridge
REGINALD D. MARGESON . . . . Westwood

General Chemistry

FRANCIS G. MINITER . . . . Medford
JOSEPH E. REDDEN . . . . Springfield
FRANKLIN H. KILLAM . . . . West Somerville

Physiology

ALFRED W. BROWN . . . . Quincy
EDGAR S. POTTER . . . . Chepachet, R. I.
ALFRED E. GALLANT . . . . Waltham
EDWARD M. HODGKINS . . . . Dorchester

Student Government Board

The members for the current year of the Student Government Board of the Medical and Dental Schools are as follows:

CHAIRMAN
Elmer Stanley Bagnall, M '13

SECRETARY
Joseph Francis Sullivan, D '13

MEDICAL SCHOOL:

- Alfred W. Brown, '13
- Henry L. Davis, '14
- Winthrop Adams, '15
- Nicholas DuValley, '16

DENTAL SCHOOL:

- Fred E. Simm, '13
- Josepe M. Kelley, '14
- Charles L. Maloney, '15

Tufts College Dental School

416 Huntington Avenue

Boston, Mass.

The Dental School, formerly the Boston Dental College, became an incorporate part of Tufts College in 1899, under a special act of the legislature. It was incorporated under its former name in 1868, and is a firmly-established dental school of forty years' standing, with a large and distinguished body of alumni. Its transfer to Tufts College was in consequence of the new anatomical laws of the State, and because it was felt by its former board of trustees that the advance in dental education rendered it desirable that the purely scientific part of its curriculum should be pursued in connection with a medical school.

The course of instruction in this institution embraces three academic years of eight months each. The studies of the first year, and a portion of those of the second year, are given in connection with those of the Medical School. Instruction is by means of lectures, demonstrations, laboratory work, and recitations, in anatomy, physiology, histology, chemistry, materia medica, pathology, therapeutics, bacteriology, principles of surgery, hygiene, theory and practice of dentistry, oral surgery, and in operative, clinical, and prosthetic dentistry, orthodontia, and dental technics.

The infirmary, under the personal direction of the Professor of Clinical Dentistry, assisted by a corps of demonstrators, is open daily through the year, except during a part of June, the whole of July and August, and a part of September. In the abundance and variety of its clinical material it furnishes an unsurpassed opportunity for the study of oral surgery and of dentistry in all its branches.

The laboratory of the prosthetic department is provided with perfect facilities for every variety of dental work. Every student is required before graduation to present satisfactory specimens of the different forms of mechanical work made by himself in the laboratory of the School, and under the supervision of the Professor of Prosthetic Dentistry.

Further opportunities for instruction are furnished by the valuable clinics and operations at the large hospitals of the city, which can be visited by the matriculates of this institution. Numerous operations upon the face and oral cavity are performed before students on public operating-days, and all connected with the School are urged to avail themselves of the facilities thus offered.

THE BUILDING

The building is occupied by the combined Medical and Dental Schools of Tufts College, and was built in 1900, as it was found necessary to provide increased laboratory facilities owing to the rapid growth of the schools. Special attention is called to the dental infirmary which occupies the first floor of the dental wing. This room, 125 by 29 feet, is equipped and arranged in a manner similar to the operating room of a hospital; aseptic chairs, cuspidors and brackets have been especially constructed for this school. Steam sterilizers have been provided for the disinfection of instruments, and it is believed that by these modern applications of asepsis to dentistry, the infirmary is among the most complete dental infirmaries in this country. The prosthetic department, which corresponds in size to the infirmary, is equipped in the most approved modern fashion. For this department electric power is supplied. The lower floor of the dental wing is devoted to operative technics and to the department of anaesthesia and extraction. In the latter department, the most improved apparatus for the administration of nitrous oxide gas is provided, and there is a recovery room under the charge of a professional nurse, who is in daily attendance. A surgeon connected with the Medical School is present on occasions when ether is administered.

Owing to the rapid growth of the School, it has been found necessary to provide more and larger quarters for lectures and laboratory work. A fourth story has been added, and the building has been largely remodeled. Three new lecture rooms have been added, giving a total of six lecture rooms, the largest seating 400 and the smallest 100. Each room has an excellent seating arrangement, and there is a sufficient equipment of opaque projectors and lantern slide apparatus. A new laboratory for the department of chemistry has been constructed on the fourth floor, the laboratory of the department of pathology and bacteriology has been renovated and enlarged, and the laboratory of the departments of histology and physiology has been completely remodeled. The building now has every possible facility for the most recent and advanced laboratory instruction.

CLINICAL FACILITIES

The clinical advantages offered are unsurpassed. In addition to the work in the School Infirmary, students are assigned to the dental clinics at the Massachusetts General Hospital, the Grace Hospital, the Boston Dispensary, the Mount Sinai Hospital, and the City Institution at Deer Island. In these institutions they receive practical instruction under the direction of instructors in the School as follows:

Massachusetts General Hospital

Demonstrator-in-Chief

William Rice, D.M.D., Assistant Professor of Clinical Dentistry.

Demonstrators

Dr. Ivan Alexis Teofil Centervall
Dr. James Elliott Cox
Dr. Williard Sawtelle Davis
Dr. Frank Alexander Delabarre
Dr. Harold Duncan Darling
Dr. Albert George Fitzpatrick
Dr. William Martin Flynn
Dr. Carolus Aaron Fox
Dr. Walter Henry Grant
Dr. James Allen MacDonald
Dr. Daniel Artell Nason
Dr. Henry Hildreth Piper
Dr. Charles Marden Proctor
Dr. Roy Churchill Skinner
Dr. Oscar Emery Wasgatt
Dr. Walter Westwood
Dr. Charles Edward Whitney

Boston Dispensary

Demonstrator-in-Chief

Dr. Edward Valentine Bulger

Demonstrators

Dr. Joseph Cornelius Gethro
Dr. Napoleon Joseph Goulet
Dr. Hugh Charles Maguire
Dr. Rene Lucien Petzoldt
Dr. Frank W. Regan
Dr. Joseph W. Shay

Grace Hospital

Demonstrator-in-Chief

Dr. Eugene Todhunter Vincent

Demonstrators

Dr. Nathaniel Woodbury Bragdon
Dr. Joseph Benjamin Ellis
Dr. Frank Rudolph Henderson
Dr. Charles Butler Wry

Mount Sinai Hospital

Demonstrator

Dr. Max Rosenthal

In the year 1911–12, over 45,000 operations were performed upon patients under the direct supervision of instructors in the School. These operations are grouped as follows:

Number of gold fillings	2,917
Number of plastic fillings	9,242
Treatments and cleanings	8,432
Extractions	6,208
Radiographs	120
Prosthetic Department (602 patients making an average of 5 visits each)	3,010
Crown and Bridge (563 cases making an average of 4 visits each)	2,252
Orthodontia	5,400
Boston Dispensary clinic (1910–11)	3,854
Massachusetts General Hospital clinic (approximate figures, nine months)	2,920 2,920
Grace Hospital clinic (nine months)	675
	45,030

Subjects of Instruction

ANATOMY

The course in anatomy is given throughout the first half of the first year. It consists of five lectures and two recitations weekly with the class, and of special demonstrations on the cadaver. In addition, during the first four weeks of the course six hours a week are devoted to section work in Osteology. Each student is required to dissect two parts, to the satisfaction of the Demonstrator of Anatomy, before taking the final examination. Record of attendance and of the quality of the work done in the dissecting room will be kept, and will largely determine the standing of the student in the class.

CHEMISTRY

The course in general chemistry consists of descriptive chemistry and qualitative analysis, with so much of theoretical chemistry as is necessary for a proper understanding of the subject.

The classification of the carbon compounds is also taken up at considerable length, and special reference is made to those which are of interest in the study of medicine. The instruction is by lectures, recitations, and practical work by the students in the laboratory. There are five lectures, two recitations, and six or more hours of laboratory work for each student, every week during the first semester. Much attention is given to qualitative analysis for the sake of the valuable training which it imparts, and the knowledge of chemistry which is incidentally gained. The importance of this knowledge is evidenced by the fact that it is the only non-professional subject that is required in most dental schools. The aim is to impart such information in chemistry as is necessary to the intelligent dentist. At the same time any who wish to pursue the study further than is required of every graduate may do so by special arrangement.

During the second year this preliminary training in chemistry is followed by lectures, recitations, and laboratory work in dental chemistry. The metals, with their alloys and salts as used in dentistry, the bones and the teeth, the saliva, and the chemistry of the mouth are carefully studied. The high importance of the many applications of chemistry to the dental profession is fully recognized.

PHYSIOLOGY

The course in physiology is given throughout the latter half of the first year. It consists of five recitations, two lectures, and three conferences for every student each week, the preparation of a technical written paper, and extra demonstrations.

In the recitations, familiarity with the substance of an assigned text-book and with the Syllabus is required. The lectures set forth the principles of general physiology, and suggest some of its relations to the allied sciences, especially anatomy. The conferences give volunteers opportunity to become familiar with the literature on interesting physiological topics, which are then presented briefly in written reports and freely discussed by the class. Record both of the attendance and of the quality of the work done in the recitation-room will be kept, and, with the conference, will help to determine the standing of the student in the department. In addition, a three-hour written examination covering the entire scope of the year is held at the completion of the work, besides important subsidiary written examinations monthly.

By thus concentrating attention upon physiology during an adequate period, it is hoped that a thorough and indispensable grounding in the functions of the normal human organism will be acquired. Advanced work in physiology will be provided for competent students, by special arrangement with the head of the department, the constant aim being to adapt the labors of each student both to his needs and to his capabilities.

HISTOLOGY

The subject of histology covers the second half of the first year. The work during the first half of the allotted time will be identical with that of the students in the Medical School. This part of the subject covers the study of the elementary tissues, treated comprehensively, beginning with their origin in the embryo. Dental histology will be taught during the second year. In this connection particular attention will be given to the study of the minute anatomy of the tooth. The development of the teeth will also receive careful treatment. A training which gives the student a knowledge of the origin and history of the dental germ lays a suitable foundation for the dentist.

The department is equipped with microscopes which, on the payment of a small fee, will be at the service of such as cannot furnish instruments of their own.

OPERATIVE DENTISTRY

In operative dentistry the instruction is both didactic and clinical. Lectures are given covering the whole field, familiarizing the student with all known methods, the conditions under which different filling materials are used, and the most approved manipulation of the same. Many lectures are followed by clinics before divisions of the classes, where attendance is obligatory. By this means every detail of the operation is impressed upon the mind of the student. Great emphasis is placed upon the preparation of cavities for filling. Instruction is further given concerning the pathological conditions of the mouth and the treatment of the same, exposed pulps, inflamed pulps, dead pulps, abscesses, inflammation of the peridental membrane, and allied subjects. Special attention is given to the preparation of cavities for porcelain filling, and the manipulation of the same. Prophylaxis also is taught, under improved systematized methods.

OPERATIVE TECHNICS*

The technical laboratory is situated on the lower floor, and is exceptionally well lighted from three sides. It is equipped with benches having lock drawers for each student, and has power lathe and other implements for convenient use.

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* NOTE.—The operations in the technical departments require a very large number of natural teeth, and a sufficient supply is sometimes difficult to get. It will therefore be to the interest of students if they will bring with them all the extracted teeth they can obtain.

Instruction in this course will be by lectures, illustrated by models and drawings, and by practical work on the part of the student. The student's work will include the study of the forms of teeth, with carving in ivory; study of the position and form of pulp chambers and canals, with dissection of teeth; proper methods of treating and filling pulp canals, with operations on extracted teeth, porcelain inlay work, with practical examples, also proper methods of forming cavities for filling, and the manipulation of all filling materials, will be included.

CLINICAL DENTISTRY

The method of instruction in clinical dentistry is by clinical lectures to the students of each class, accompanied by practical demonstration of various operations on the teeth and neighboring tissues.

Ample opportunity for work in practical operative dentistry is furnished in this department, and the student, by actual practice, receives training in the various dental operations, and in the diagnosis and treatment of diseased conditions of the mouth and teeth.

PROSTHODONTIA

The instruction in prosthodontia consists of a graded course of didactic lectures to the entire class, illustrated by models and diagrams, on the nature, properties, and manipulation of the various materials used in making artificial dentures, crowns, and bridge-work, preparatory to, and in harmony with, the laboratory work in prosthetic dentistry. These lectures extend through the three years of the course.

PROSTHETIC DENTISTRY

Particular attention is given to practical manipulation of vulcanite, celluloid, aluminum, and cast metal, for dentures; to gold-plate work, to preparation of plate for continuous gum and the application of continuous gum to crown and bridge work, as well as the construction of gold crowns and bridges. The natural form, color, and arrangement of the teeth, together with the entire range of procedure, from taking the impression to the completion of the case and its proper adjustment in the mouth, are thoroughly demonstrated.

ORTHODONTIA

The department of orthodontia offers two courses of lectures, dealing with the subject from an eclectic standpoint. The Junior year is devoted to the theory of normal and malocclusion, history, diagnosis, etiology, technique and uses of appliances, continuing in the Senior year with the practical application of the principles of orthodontic procedure to the different classes of malocclusion and to actual cases. The lectures are illustrated by charts and lantern projections and demonstrated on an adjustable model of heroic size, on which can be shown, to the entire class, normal occlusion in all its aspects, as well as any possible cases of malocclusion. Four hours a week in the Senior year are given to clinical work. Each student is required to conduct at least one case, doing all of the work under the instruction and supervision of the professor and an adequate corps of instructors. A consultation service has been established for the benefit of graduate dentists, through which the advice of this department can be obtained in the conduct of private cases.

PHARMACOLOGY

Instruction in pharmacology consists of lectures, recitations, and laboratory exercises, twelve hours a week throughout the second half-year. Especial attention is given to the physiological action of drugs in its relation to their therapeutical application, and to the relation always existing between therapeutics and physiological and pathological laboratory work. The laboratory course is designed to familiarize the student with all medicinal preparations and processes, and consists of exercises in which the class in sections is led to this result practically.

Prescription writing and the metric system will receive careful attention. Such of the recent additions to *materia medica* as are deemed worthy will be properly considered.

PATHOLOGY AND BACTERIOLOGY

The subjects of pathology and bacteriology will be considered together. This method permits showing the relation of bacteria to the disease processes which they produce. The work will consist of lectures, required laboratory work, and demonstrations. The student is made acquainted with the bacteria of the mouth, and is required to cultivate and study the important organisms. He is expected to carry out experiments to demonstrate the production of artificial caries. The subject of general pathology will be thoroughly covered. The special pathology of the mouth, and of the respiratory and intestinal tracts, will be given particular attention. Inflammation, especially the infectious types, among which are the lesions produced by the pyogenic bacteria, will be carefully considered. The process of repair in soft tissues and bone, and tumors of the mouth and face, are studied from sections of human and experimental lesions, and illustrated by demonstrations of gross specimens. In connection with the study of infectious processes, the specific bacteria will be cultivated and studied. Diseases of the circulatory system are illustrated by lectures and gross demonstrations. The methods of sterilization and their relative efficacy are practically studied, and tests are made of a large series of antiseptic and disinfectant substances.

The pathological and bacteriological department of the School occupies over four thousand square feet of floor space, with a frontage of one hundred and sixty feet. It is excellently lighted. The laboratory furnishes accommodation for one hundred students, and is supplied with all the materials necessary for thorough work.

THEORY AND PRACTICE OF DENTISTRY

The instruction in the theory and practice of dentistry is designed to teach the most advanced scientific discoveries in relation to this art.

It will include such subjects as the action of mouth bacteria, diseases dependent upon dental lesions, dental prophylaxis, oral hygiene, and the ethics of dental practice. The course will be arranged to harmonize with and to supplement the work of the clinical department.

SURGERY

The course in surgery consists of a systematic series of lectures covering its principles. These lectures explain the fundamental facts which should be thoroughly understood by all students who propose to treat any portion of the human body. The lectures are not limited to surgery of the mouth, although especial attention is given to this part of the subject, but are intended to give the dental student a sound knowledge of surgery in general.

Asepsis and anesthesia are minutely discussed, and practically demonstrated in the infirmary, in conjunction with the Professor in Operative Technics and Anesthesia. The student is carefully instructed in the administration of ether and of nitrous-oxide gas. In addition to the daily instruction, one morning in each week is devoted wholly to this work, the class being divided into sections. At this weekly demonstration, cases are presented exemplifying the choice of an anesthetic in the particular case. The danger signals of anesthesia are considered, and the proper treatment explained. Local anesthesia receives careful attention, and its limitations are pointed out.

The technic of aseptic and antiseptic methods in dental work is thoroughly explained, and shown in connection with the demonstrations of anesthetics.

ANESTHESIA AND EXTRACTION

The extracting room, a well-lighted apartment, is supplied with all needful instruments and appliances for extracting teeth and for the performance of the simpler operations in surgery. Ample waiting rooms are adjacent, and also rooms for the care of patients after anesthesia. Administrations of nitrous-oxide gas and ether are made daily. The room is at all times under the personal supervision of the Instructor in Anesthesia.

Requirements

FOR ADMISSION TO THE FIRST-YEAR CLASS

Candidates are admitted in two ways:

1. By credentials.
2. By examination.

1. Admission by Credentials

Graduates of approved colleges or universities, graduates of approved high schools, and students holding Regent's Certificates of the State of New York, are admitted without examination. Candidates west of New York may present full statement of their record in the courses pursued, for consideration by the Committee on Admission.

2. Admission by Examination

Candidates for admission by examination must have received adequate preparation in certain subjects falling in two groups, known respectively as the Required and the Elective Group. A unit represents a year's study in any subject in a secondary school, representing approximately a quarter of a full year's work. Fourteen units are required for admission. A student who has failed in not more than five units may be admitted subject to conditions which he must make up before beginning the studies of the second year.

The Required Group

Elementary English, 3;
An Elementary Foreign Language, Ancient or Modern, 2;
Elementary Physics, 1;
Elementary Algebra, 1½;
Plane Geometry, 1.

Candidates are required to present all the subjects of the Required Group and a selection of subjects from the Elective Group aggregating 5½ units, according to the value indicated below.

The Elective Group

Elementary

Greek, 2
Latin, 2
French, 2
German, 2
History, 1
Chemistry, 1
Botany, 1
Zoology, 1
Geology and Geography, 1
Mechanical Drawing, 1
Freehand Drawing, 1
Shop Work, ½ to 2
Economics, ½
Anatomy, Physiology, and Hygiene, ½

Intermediate

Latin, 1
French, 1
German, 1

Advanced

Greek, 1
Latin, 1
French, 1
German, 1
History
Algebra, ½
Trigonometry, ½
Solid Geometry, ½

Detailed information concerning the amount and character of the work required in preparation will be sent on application.

ADVANCED STANDING

Students who have taken courses in other accredited dental schools are admitted to advanced classes upon presenting satisfactory evidence that they have passed the examinations required for the class they desire to enter.

Students presenting evidence of a course equivalent to the course in general chemistry given in the first year are allowed to anticipate the subject upon passing the fall examinations.

PROMOTION

Students who have passed a majority of the examinations of the first-year class, and all entrance conditions, may be promoted to the second-year class. Students who have passed all the first-year and a majority of the second-year examinations may be admitted to the third-year class.

GRADUATION

Candidates for the degree of Doctor of Dental Medicine must have fulfilled the following minimum requirements:

1. They must present a certificate that they are twenty-one years of age and of good moral character.

2. They must have attended at least three full courses of lectures in some accredited dental school, the last of which shall have been at this School, and no two courses in the same twelve months.

3. They must have passed all the examinations required, and have satisfied the professors of clinical and prosthetic dentistry of their ability to meet satisfactorily the requirements of the profession.

4. They must have satisfactorily dissected under the direction of a demonstrator of anatomy.

5. They must have paid all fees.

CHANGE OF REQUIREMENTS

The Faculty reserve the right to change all requirements without further notice.

HONORS

Students who have attended three full courses of lectures at this School and have attained an average of ninety per cent. in their examinations shall be eligible to "*summa cum laude*"; and students who have attained an average of eighty per cent. shall be eligible to "*cum laude*" in connection with the degree received.

STANDING AND CERTIFICATES

At the end of the session a certificate of his standing for the year is sent by mail to each student. No marks will be sent or credit given to any student who is in arrears with the Bursar.

EXAMINATIONS

There are two periods of examination held each year in the school building. Examinations are in writing, and are held at the close of the course in the spring, and previous to the opening of the regular course of lectures in the fall.

The spring examinations are for:

(*a*) Students commencing the study of dentistry.
(*b*) Promotion.
(*c*) Graduation.

The fall examinations are for:

(*a*) Students commencing the study of dentistry.
(*b*) Removal of conditions in:
    1. Previous entrance examinations.
    2. The first-year course.
    3. The second-year course.

Students intending to take the fall examinations (other than entrance) *are required* to notify the Secretary on or before August 30.

The fall examinations for the removal of conditions (other than entrance) will commence Monday, September 8, 1913, at 10 A.M. A detailed list of the subjects in which examinations are given, with the day and hour of each, will be mailed after August 30, on application.

REGISTRATION AT EXAMINATIONS

In each examination (except those for entrance) students who fail to sign the registration blank provided for the purpose shall receive no credit for that examination.

The examinations in course are as follows:

EXAMINATIONS

First Year. *Finals* in Anatomy, Physiology, General Chemistry, Histology, and Operative Technics.

Progress in Prosthetic Dentistry and in Prosthodontia.

Second Year. *Finals* in Materia Medica, Pharmacology, Dental Chemistry, Pathology, Bacteriology, and Dental Histology.

Progress in Operative Dentistry, Clinical Dentistry, Orthodontia, Prosthetic Dentistry, and Prosthodontia.

Third Year. *Finals* in Oral Surgery, Orthodontia, Theory and Practice, Operative Dentistry, Clinical Dentistry, Prosthetic Dentistry, and Prosthodontia.

TEXT BOOKS

The first book mentioned is preferred as a text-book, the others being recommended as collateral reading.

Anatomy.—Gray, Weisse, Quain, Morris, Cunningham, Solatta, McMurrich.

Bacteriology.—Abbott, Woodhead, Sternberg.

Chemistry.—Simon's Manual, Witthaus, Storer and Lindsay, A. H. Elliott's Qualitative Analysis, Mitchell's Dental Chemistry.

Dental Histology and Microscopy.—Syllabus, Stohr's Histology, Tome's Dental Anatomy (latest edition).

Dental Science and Operative Dentistry.—Kirk's Operative Dentistry, Garretson's Oral Surgery, Black's Dental Anatomy, Weeks's Operative Technics, American System of Dentistry, Harris's Practice of Dental Surgery, Taft's Operative Dentistry.

Hygiene.—Egbert's Hygiene and Sanitation.

Materia Medica and Therapeutics.—Hare, Sollman, Cushny Thornton's Dose Book and Manual of Prescription Writing.

Medical Dictionary.—Dunglison.

Orthodontia.—Malocclusion of the Teeth, Angle (7th edition); Orthodontia, Guildford (4th edition); Internal Anatomy of the Face, Cryer.

Pathology.—Syllabus, Miller's Micro-Organisms of the Human Mouth, Burchard's Dental Pathology.

Physiology.— Syllabus, Dearborn's Text-Book of Physiology, Howell, Landois, Verworn, Schäfer, Morat, Hutchinson.

Practice of Surgery.—American Text Book, Marshall's Injuries and Surgical Diseases of the Jaws, International Text-book of Surgery.

Prosthetic Dentistry.—Essig's American Text-book of Prosthetic Dentistry, Richardson's Mechanical Dentistry, Evans's Crown and Bridge Work, Gilbert's Vulcanite and Celluloid.

FEES AND EXPENSES

A matriculation fee of *five dollars* is payable each year.

A charge of *one hundred and fifty dollars* for tuition is payable in advance. If not paid before November 1, there will be an additional charge of *five dollars*.

If desired, the tuition may be paid in instalments, in which case an additional charge of five dollars is made, and the fees are then paid as follows: —

First payment: — Five dollars for matriculation fee and seventy-five dollars on account of the tuition, a total of *eighty dollars*, payable at the beginning of the first semester.

Second payment: — Seventy-five dollars, the balance of the tuition, and five dollars, the additional charge, a total of *eighty* *dollars*, payable at the beginning of the second semester, or before February 1.

There is no charge for laboratory supplies. Anatomical material will be furnished at cost.

No student will be admitted to the exercises of the first half-year who has not paid his matriculation fee and at least one-half the tuition, and no student will be admitted to the exercises of the second half-year who has not paid his fees in full.

Students leaving the School have no claim for tuition paid.

Students who have failed twice in a subject are required to pay a fee of five dollars for each subsequent examination in that subject.

POST-GRADUATE FEES

Post-graduate fee for graduates of other schools	$150.00
Single course	50.00
Post-graduate fee for graduates of this School	60.00
Single course	30.00
Anatomical material	at cost

The Bursar of the College will be at the School Monday, Wednesday, and Friday, 2.30 to 5.00 P.M., from October 1 to June 1.

There are no scholarships connected with the School.

The expenses of living in Boston need not exceed those in small cities and villages. Good board, including room, heat, and light, can be obtained in the vicinity of the School at rom $5.50 to $7 a week. Students will not be allowed to occupy rooms disapproved by the Faculty.

OUTDOOR DEPARTMENT

Clinical Dentistry

For many years it has been the custom of the authorities of this School to furnish to certain charitable and penal institutions qualified dentists for the purpose of alleviating cases of actual suffering. Applications for an extension of this service should be made to E. A. Johnson, D.M.D., Department of Clinical Dentistry, Tufts College Dental School, Boston, Mass.

Prosthetic Dentistry

In a manner similar to the above it has been the custom of the authorities of this School to furnish to the inmates of certain institutions for the aged, at the nominal charge of the cost of materials, artificial teeth and appliances. Institutions desiring to avail themselves of the privilege should apply to Walter E. Farris, D.D.S., Department of Prosthetic Dentistry, Tufts College Dental School, Boston, Mass.

STATE BOARD EXAMINATION

Students shall not take a State Board Examination in Dentistry previous to the time of final examinations of the third year, without written permission from the Secretary of the Dental School.

General Information

The Tufts College Dental School is a member of the National Association of Dental Faculties, and conforms to its rules, as well as to those of the National Association of Dental Examiners.

All students must be registered and in attendance within ten days after the commencement of lectures.

LIBRARIES

The students of this School have free access to the Dental School Library, to the Library of Tufts College, to the Boston Public Library, and to the Boston Medical Library.

The library at the Dental School is open daily from 9.00 a. m. to 5.00 p. m., except Sundays and holidays. This library is intended to provide *text books for reference*, and the latest editions of all text books used in the School are furnished. These cannot be taken from the Reading Room. In addition, the library contains a large number of reference books in general medicine and general surgery, and in all special branches of each. These works are loaned to the student free of charge, and can be taken out. Files of recent dental journals are a valuable addition to the school library.

The Boston Medical Library, which is situated near the School, has one of the largest and most complete collections of medical works in existence. It contains not only bound volumes of every important book in medical literature, but also a very extensive collection of monographs and pamphlets on special subjects. All the leading medical journals are on file for inspection. The Boston Medical Library extends its privileges, under certain conditions, free of charge to students of this School. Its rooms are open daily from Oct. 1 to May 31, from 9.30 A. M. to 10.00 P. M., except Sundays and holidays. The hours on Saturdays are from 9.30 A. M. to 6 P. M.

SESSIONS OF THE SCHOOL

The annual course of lectures begins on the last Wednesday in September of each year, and continues until the last Wed nesday in May. The annual course of lectures for 1913–14 will commence Wednesday, September 24, 1913, at 3 p.m.

VACATIONS

There are no exercises at the School during three days at Thanksgiving, ten days at Christmas, and the week beginning April 6, nor upon Columbus Day, Washington's Birthday, Patriots' Day, and Memorial Day.

APPLICATIONS

Students who intend to enter the School for the first time must obtain from the Secretary an application blank, which they are required to fill out and return to him. Application blanks will be mailed upon request.

REGISTRATION

Registration is required of all students, each year. Registration for the Session 1913–14 will commence Monday, September 8, and will close Saturday, October 4, 1913.

Registration is conducted at the school building only.

ANNOUNCEMENT

Requests for the annual catalogue, and all other communications relating to the business of the School, should be addressed to the Secretary, Frederic M. Briggs, M.D., Tufts College Dental School, Boston, Mass.

Summer Courses

The following subjects are offered during the summer months :—

PHYSIOLOGY

A course in physiology will be given during the months of June and July by, or under the direction of, the Professor of Physiology. For particulars of the course application should be made to Dr. Dearborn.

HISTOLOGY

A summer course will be given under the direction of the Professor of Histology. Particulars as to the scope of this work, and the fee, may be learned upon application to Dr. Bates.

THE
BROMFIELD-PEARSON
SCHOOL

The Bromfield-Pearson School

BOARD OF INSTRUCTION

WILLIAM L. HOOPER, A.M., PH.D., ACTING PRESIDENT

GARDNER C. ANTHONY, A.M., SC.D., DEAN
Professor of Technical Drawing

SAMUEL C. EARLE, A.M.
Professor of English

CONRAD A. ADAMS, B.S.
Instructor in Mechanic Arts

GEORGE F. ASHLEY
Assistant Professor of Technical Drawing

ALEXANDER DILLINGHAM, A.M.
Instructor in Mathematics

MERRILL C. HILL, A.B.
Instructor in Modern Languages

The Bromfield-Pearson School

The Bromfield-Pearson School is intended to meet the wants of young men whose preparation for an Engineering course may be partially deficient in one or more of the required branches, but whose practice and experience in the applied part of Engineering may qualify them to pursue college work while making up these deficiencies. By this means an engineering education is made possible to those who may have been deprived of the opportunities for obtaining the necessary preparation, or who may have allowed considerable time to elapse between the high school and the college course. A mature mind, industrious habits, and a keen appreciation of the value of the higher education in Engineering are essential qualifications for engaging in this work.

As it is the intention of the Trustees to limit the membership to those earnest and somewhat mature students who cannot afford the time ordinarily required in the fitting school, candidates will not be received from manual training and high schools.

ADMISSION

Students intending to join the School must obtain from the Dean an application blank, which they are required to fill out and return. On receipt of this statement they will be informed as to the conditions of entrance and the program of studies which it will be possible to pursue.

REGULATIONS

Students are subject to all the rules governing members of the College.

All preparatory work must be completed during the year, as no student will be admitted to the School for more than one year.

Students admitted to college classes will be required to obtain a somewhat higher per cent. than the minimum requirement for engineering students.

On the satisfactory completion of the preparatory work students will be given a certificate of admission to the College. They will also receive credit for college work which may count toward a degree.

The President and the Dean have final authority concerning admission, promotion, and discipline.

EXPENSES

The tuition fee is one hundred and fifty dollars a year, payable as follows: seventy-five dollars on or before October 1, and the remainder on or before March 1.

A registration fee of five dollars is charged each entering student, and is payable at the time of registration.

No part of the tuition fee will be refunded to pupils who for any reason withdraw from the School before the close of the term for which the fee is paid.

The cost of table board is from $4.00 to $5.00 per week. Furnished rooms may be had at $1.50 or $2.00 a week. Other expenses vary with the economy of each student. Students living in the college dormitories furnish their own rooms.

The following estimates represent the fixed annual expenses: —

Tuition	$150.00	$150.00
Half-room rent	20.00	91.00
Board, $4.00 to $5.00 a week (36 weeks)	144.00	180.00
Physical training		15.00
Books, instruments, and supplies	15.00	25.00
Total	$329.00	$461.00
Registration-fee, for entering students		$5.00

For other information address GARDNER C. ANTHONY, Dean of the Bromfield-Pearson School, Tufts College, Mass.

The Harpswell Laboratory

INSTRUCTORS

J. STERLING KINGSLEY, Sc.D.
Director, and Professor of Biology

HERBERT V. NEAL, Ph.D.
Professor of Biology, Knox College, Galesburg, Ill.

In 1898 summer instruction in biology was given at South Harpswell, Maine, and in 1901 the College erected a small laboratory at that point, enlarging it in 1902. The location is admirably adapted for biological research, since the fauna of Casco Bay is extremely rich. Over forty papers have been published based on researches carried on in the laboratory. The laboratory is equipped with boats, dredges, glassware, apparatus, and reagents, for study on the lines of anatomy and embryology. There is also a small library of the most important works.

South Harpswell is two hours by steamer from Portland. It is at the extremity of a narrow peninsula ten miles in length, and has a cool climate. There are several hotels and boarding houses, where board and rooms may be had at five dollars a week and upward.

The Harpswell Laboratory will be open free during the summer of 1913, for research work only, under the direction of Drs. Kingsley and Neal.

For circulars and other information concerning the Harpswell Laboratory, inquiries should be directed to Professor J. S. Kingsley, Tufts College, Mass., or to Professor H. V. Neal, Galesburg, Ill.

DEGREES AND HONORS

1911-1912

Fifty-Sixth Annual Commencement

June 19, 1912

HONORARY DEGREES CONFERRED

Doctor of Humane Letters

Frederic Aldin Hall

Master of Arts

John Garibaldi Sargent

Doctor of Science

William Hollis Godfrey

DEGREES CONFERRED IN COURSE

Bachelors of Arts

Herbert Dallas Bixby, Ph.B. (extra ordinem as of the Class of 1902)
Vernon Edmund Blagbrough, S.T.B.
Edith Harriet Bradford
Ralph Hasty Bragdon (*cum laude*)
Ferdinand Brigham
Marion Louise Brooks
Courtney Bruerton (*summa cum laude*)
Beatrice Labaree Davis
Dorothy Russell Entwistle (*cum laude*)
Austin Wellington Fisher
Lena Frances Fuller
Marion Adelaide Green
Allen Gunnison Hooper
Richard Roy Lamont (*cum laude*)
Pauline Adriana Lamprey
Pearle Emogene Longley (*cum laude*)
Robert Manning Lowe
John Francis Lynch
Clarence Harvey Mackin
William Shipman Maulsby (*cum laude*)
Effie May Ritchie
Willis Brainard Robinson
William Paine Smith
Alice Josephine Spear
Ernest Siegfried Swenson
Edith Marguerite Van de Bogart
Edna Currier Woodbury

Bachelors of Science in Chemistry

Robert Herman Bogue
Louis Hayward Carter
Albert William Davis (*cum laude*)
Walter Sprague Frost
Percy Godfrey Savage

Bachelors of Science in Civil Engineering

Percy Clyde Charnock
James Joseph Haley (extra ordinem as of the Class of 1911)
Nathan Conant Harris
William Vincent Killion
Lloyd Lewis Mansfield
Clifford Elliott Williams (extra ordinem as of the Class of 1911)

Bachelors of Science in Structural Engineering

Arthur Julius Anderson (*magna cum laude*)
Ernest Wing Bailey (*summa cum laude*)
Arthur Williams Brandt
Stanley Morton Brown
Maurice Brown Greenough
William Mosher Jones (*cum laude*)
Frank Wood Merrill
Edward Frederick Olson (*magna cum laude*)
Roland Humphrey Page (*cum laude*)
Leslie Ross Porter
Samuel Schwartz (*cum laude*)
Harry Oscar Weber (*cum laude*)
Charles Hermon Williams (extra ordinem as of the Class of 1911)

Bachelors of Science in Electrical Engineering

Charles Aaron Bacon (*cum laude*)
Harry Irving Bicknell (*cum laude*)
Ralph Lawrence Bugbee (*cum laude*)
Benjamin Jarvis Butler
Frank Currier Doble
Parker Wheeler Fairbank
Daniel Alexander MacKillop
Joseph da Silveira Martins
Francis Howard Patten
Alvin William Quennell

Bachelors of Science in Mechanical Engineering

Edwin Percy Bugbee (*magna cum laude*)
Irving Wilson Jackman (*magna cum laude*)
Ernest Alonzo Larrabee
Harold Romaine Phalen

Bachelors of Science in Chemical Engineering

Harry Arthur Atwater
George Keenan Hamill
Earl Robert Marble
Edward Parkhurst Phelps (*cum laude*)
John Albert West (*magna cum laude*)

Bachelor of Sacred Theology

William Forbes Robertson

Doctors of Medicine

Hjalmar Ahlstrom (extra ordinem as of the Class of 1911)
Lionel Louis Albert (*cum laude*)
Carlton Eugene Allard
Charles Elton Ayers
Willis Oliver Barney
Emile August Barrier
Allen Rogers Barrow
Charles Alfred Benway
Ralph William Bicknell
Chester Perkins Brown
Ralph Neally Brown (*cum laude*)
Arthur Lord Brunelle
Abraham Burack (*cum laude*)
Harry Cutter Burrell (*cum laude*)
Claude Henry Church
Thomas Greene Clarke (extra ordinem as of the Class of 1911)
Willis Earl Clarke
Robert Emmett Cleary
Albert William Colwill, Pharm. D. (*cum laude*)
Brainard Francis Conley (extra ordinem as of the Class of 1911)

Anthony Corvese, Ph.G. (*cum laude*)
Joseph Justin Cosgrove (extra ordinem as of the Class of 1911)
Mary Catherine Couch
Frank Rudolph Coursey
Thomas Joseph Courtney
Frank Anthony Cummings
John Francis Curran (*cum laude*)
Cyrus Richardson Currier (extra ordinem as of the Class of 1911)
Raymond William Cutler
Myron Fred Cutler (*cum laude*)
Charles Frank Davis, Jr. (*cum laude*)
Charles Wentworth DeWolf (*cum laude*)
Edgar Joseph Dunbar
Stanley Forbes Duncan
Gonzalo Espejo
Daniel John Fennelly (extra ordinem as of the Class of 1911)
Samuel Paul Finkel (*cum laude*)
Nathan Finkelstein (*cum laude*)
Neil Kittredge Forhan
Erle D. Forrest (*cum laude*)
George Garry
Harriet Marion Gervais (*cum laude*)
William Benard Giles (*cum laude*)
David Glunts
Hattie Greenblatt (*cum laude*)
Alfred Weston Gwinnell (extra ordinem as of the Class of 1911)
Samuel Carlton Gwynne (*cum laude*)
Irma Ruth Howard (*cum laude*)
Harmon Paul Buffum Jordan
Ernest Hart Judd
Lawrence Kendall Kelley
Daniel Joseph Kiley, Jr. (*cum laude*)
Michael Allen Kinsella
Edward Augustine Knowles (*cum laude*)
Henry Edmund Lynch (extra ordinem as of the Class of 1911)
Cordelia Isabella MacNaughton
John Joseph Madden, Jr.
Jacob Marcus (*cum laude*)
Edward Loring Marr (extra ordinem as of the Class of 1911)
Robert McClellan Marr (extra ordinem as of the Class of 1911)
Harold Winthrop Martin
Pierce Powers McGann
Arthur Otis McLaughlin (*cum laude*)
Bernadette Marie McWeeny (*cum laude*)
Willis Pearl Middleton (*cum laude*)
Mary Frances Monaghan
John Joseph Moriarty (extra ordinem as of the Class of 1911)
Daniel Francis Murphy
Philip Mysel (*cum laude*)
Edward Joseph O'Brien, Jr.
Albert Simpson Owen (extra ordinem as of the Class of 1911)
Sumner Haven Remich
Horace Eddy Robinson
Norman McLean Scott (extra ordinem as of the Class of 1911)
Hollis Lester Seavey (extra ordinem as of the Class of 1911)
Samuel Kelman Segall
Philip Edward Anthony Sheridan, A.B.
Frederic Ira Spinney
William Delano Sproat (*summa cum laude*)
Floyd R. Stamp (*cum laude*)
Carleton White Steward, A.B. (extra ordimem as of the Class of 1911)
Henry Edward Stone (*cum laude*)
Charles Joseph Sullivan
John Henry Throop Sweet, Jr.
George William Tully (*cum laude*)
William Leo Turetsky (*cum laude*)
George McLeod Waldie (extra ordinem as of the Class of 1911)
Roscoe Morgan Waterhouse (extra ordinem as of the Class of 1911)
George Bradford Weatherbee
Anna Colburn Wellington
Henry Alverado White (extra ordinem as of the Class of 1911)

Doctors of Dental Medicine

Henry Roy Allen
LeRoy Sharman Austin (extra ordinem of the Class of 1911)
Karl Aubrey Bohaker (*cum laude*)
Guy Edward Brown
Francis Bradshaw Bruce (*cum laude*)
Louis Henry Cadorette
Walter James Carter
George Christman (*cum laude*)
Chester Evanda Cleaves (*cum laude*)
Michael Edward Cosgrove
Peter Costello
Daniel Joseph Crowley (*cum laude*)
Mildred Gordon Dixon
Michael Joseph Dunne
Hector Mederic Dupuis
Harold Gustavus Ekdahl (*cum laude*)
George Francis Fair
John Henry Feeley
Joseph Finkelstein (extra ordinem as of the Class of 1911)
Richard Joseph Fitzgerald
Robert Chesley Foster
Edward John Gately
John Joseph Gibbons (extra ordinem as of the Class of 1911)
Ernest Gustav Graumann (extra ordinem as of the Class of 1911)
Harry Augustus Greene
Arthur Stuart Hamilton
Harry Smith Hammond
Patrick Sarsfield Hartnett (extra ordinem as of the Class of 1911)
Walter Francis Harvey
Clarence Murray Haskell
Edmund Gallop Haskell
Arthur Warren Hayes
Leon William Hildreth (extra ordinem as of the Class of 1911)
Paul Crawford Hobart
Louis Kaston
John Joseph Kearney, Ph.B.
James Harold Keith
René Kenswil (*cum laude*) (extra ordinem as of the Class of 1911)
Edward Albert Kinley, Jr.
George Kramer
Peter Eugene Ladieu
Michael Augustine Landers
Richard Booth Larkin
Timothy Francis Leary
Henry Hyman Leavitt
Owen Joseph Logue (extra ordinem as of the Class of 1911)
Daniel Simon Long
William Reuben Messer (*cum laude*)
George Augustus Monahan
Richard James Mulcahy, A.B.
Louis Olin
Harry Clothey Peavey
David Pinsky
Lester Hunkin Plaisted
Harris Wayland Price (extra ordinem as of the Class of 1911)
Martin Wilfred Qualters
Howard Bowen Randall
Harvard James Reilly
Jacob Frederick Roberts
Harry Clifford Ryder
Willard Eaton Sedgwick (*cum laude*)
Harold Woodbury Shedd (*cum laude*)
Charles Shackford Spencer
George Allen Springall (extra ordinem as of the Class of 1911)
Harry LeBaron Stalker
Dean Clayton Stevens
William Dimon Taylor
James Francis Tierney
Nathan Herbert Tirk
Alfred Seldon Wass
Karl Smith Webster

Masters of Arts

Evelyn Hearsey, A.B. (Chemistry)

Bertram Dyer Hulen, A.B. (History and Public Law)

Llewellyn Rood Perkins, B.S., A.B. (Mathematics)

Jackson College for Women

Bachelors of Art

Marjorie Leslie Henry (*magna cum laude*)

Frances Willard Huntington

Honorable Mention

Marjorie Leslie Henry (Greek and Latin)

Commencement Parts

Bertram Dyer Hulen, A.B., Cand. A.M.: "China as a Republic"

Harold Woodbury Shedd, Cand. D.M.D.: "Evolution of the Organs of Mastication"

Dorothy Russell Entwistle, Cand. A.B.: "Social Service"

Erle D. Forrest, Cand. M.D.: "The Physiology of Worry"

William Forbes Robertson, Cand. S.T.B.: "The Modern Minister"

Arthur Julius Anderson, Cand. B.S.: "Pioneer Work in Engineering"

Courtney Bruerton, Cand. A.B.: "Jean Richepin as seen in his 'Chanson des Gueux'"

Honors

Arthur Julius Anderson (Structural Engineering)

Ernest Wing Bailey (Structural Engineering)

Courtney Bruerton (French)

Edwin Percy Bugbee (Mechanical Engineering)

Irving Wilson Jackman (Mechanical Engineering)

Edward Frederick Olson (Structural Engineering)

John Albert West (Chemical Engineering)

Honorable Mention

Charles Aaron Bacon (Electrical Engineering)

Ernest Wing Bailey (Civil Engineering)

Harry Irving Bicknell (Electrical Engineering)

Ralph Hasty Bragdon (History and Public Law)

Courtney Bruerton (English)

Ralph Lawrence Bugbee (Electrical Engineering)

Albert William Davis (Mathematics)

Dorothy Russell Entwistle (English)

William Moshier Jones (Structural Engineering)

Richard Roy Lamont (Music)

Pearle Emogene Longley (Music)

William Shipman Maulsby (Philosophy)

Roland Humphrey Page (Structural Engineering)

Edward Parkhurst Phelps (Chemistry)

Samuel Schwartz (Structural Engineering)

Harry Oscar Weber (Structural Engineering)

Awards of Prizes, 1911–1912

Scholarship of the Class of 1882

William Joseph Bennett

Scholarship of the Class of 1898

Vannevar Bush

Greenwood Prize Scholarship in Oratory

Russell Lee Davison

Goddard Prize in Chemistry

Ralph Hasty Bragdon

Goddard Prize in French

Margaret Buck
Francis Ayer Maulsby

Moses True Brown Scholarship

Clarence Schlayer Powers

Alpha Omicron Pi Scholarship

Marion Adeline Colby

Alpha Xi Delta Scholarship

Inez Marion Gray

Rhetorical Prizes

First Prize
Carroll Charles O'Neill

Second Prize
Frank Hathaway Towsley

Third Prize
Lena Gertrude Towsley

REGISTER OF STUDENTS

Graduate School

Resident Students

Henry, Marjorie Leslie *Jamaica Plain* *79*a *Sheridan St.*
A.B., 1912 First Year Classics

Phelps, Edward Parkhurst *Greenwood* *42 Pitman Ave.*
B.S., 1912 First Year Chemistry and Biology

Thomas, Ann Eliza *Providence, R. I.* 17 Fairmont St., Tufts College

Non-Resident Students

Hayford, Frank Leslie *Brookline* *1931 Beacon St.*
Ph.B., 1901 A.B., 1902 Second Year Economics

Mergendahl, Titus Eugene *Emporia, Kansas* *Emporia College*
B.S., 1907 Second Year Mathematics

Morton, Joseph Webster *Everett* *19 Waverly St.*
A.B., 1911 Second Year Music

Moyer, Ruth *Hartford, Conn.* *125 Jefferson St.*
A.B., 1911 Second Year English

Supplementary List

(Students present during 1911–1912, but not appearing in the catalogue)

Hubbard, Elizabeth *Cambridge* *36 Arlington St.*
A.B. First Year Geology

Mergendahl, Titus Eugene *Emporia, Kansas* *Emporia College*
B.S., 1907 First Year Mathematics

Winn, Amy Josephine *Arlington* *77 Summer St.*
A.B., 1908 B.S. (Simmons) *1910 First Year Geology*

Department of Arts and Sciences

[In the following list the course pursued by each student is indicated by the Italic letters immediately following the name. The signs used are as follows: courses leading to the degree of B.S., *bs*—in Civil Engineering, *ce;* in Structural Engineering, *st e;* in Electrical Engineering, *ee;* in Mechanical Engineering, *me;* in Chemical Engineering, *ch e.* The sign *e* is used for the first two years, as no differentiation is made in the studies.

The third column records the home address, which is in Massachusetts unless stated to be elsewhere. The fourth column gives the address at Tufts College, unless the street is printed in Italics, in which case it is a part of the home address.]

School of Liberal Arts

Senior Class

Allen, Herbert Joseph	*bs*	*Ayer*	West, 20
Blanchard, Frank Nelson	*ab*	*Tufts College*	*2 Curtis Ave.*
Coombs, Harry	*bs*	*Tufts College*	Θ Λ Χ House
Dohanian, Senekerim Mardiros	*bs*	*W. Somerville*	*42 Cedar St.*
Fairbanks, Frank Bates	*ab-e*	*Passaic, N. J.*	Δ Υ House
Harrington, Rufus Frost	*bs*	*Medford*	*21 College Ave.*
Keegen, John Louis Charles	*ab*	*Brookline*	West, 12
Monge, Louis Ernest	*bs*	*Quito, Ecuador*	50 Conwell Ave., West Somerville
Page, Fred Odell	*ab*	*Plainfield, Vt.*	49 Bromfield Rd.
Rorty, James Hancock	*ab*	*Middletown, N.Y.*	Ζ Ψ House
Shute, Philip Cushing	*ab*	*Salem*	Δ Υ House
Strong, William Millgrove	*bs*	*Everett*	Dean, 14
Thacher, Lester Enoch	*bs*	*Dorchester*	Α Τ Ω House
Woode, Alva Vivian	*ab*	*Kingston, Jamaica*	East, 15

Junior Class

Campbell, Donald Kenneth	*ab*	*Tyngsboro*	West, 26
Carter, Herbert Melville	*bs*	*Norwood*	Dean, 10
Davison, Russell Lee	*ab*	*No. Billerica*	East, 20
Dillingham, Paul	*ab*	*Bridgeport, Conn.*	West, 20
Dole, John Walter	*ab*	*Enfield, N. H.*	Δ Τ Δ House
Gaskin, William	*ab-bd*	*Stafford, Conn.*	Paige, 25
Godfrey, Archiebald Joseph	*bs*	*Swampscott*	West, 26
Greenbaum, Arthur	*bs*	*Beachmont*	East, 30
Hall, Walton Shepard	*ab*	*Malden*	*23 Park St.*
Harvey, Will Calvin	*ab-bd*	*Newfane, Vt.*	Paige, 18
Huntington, Paul Osbourne	*bs*	*Ayer*	Δ Υ House
Kindred, James Ernest	*bs*	*Dorchester*	*107 Evans St.*

Magee, Joseph Vincent	*bs*	*Neponset*	East, 1
Maulsby, Francis Ayer	*ab*	*Tufts College*	Z Ψ House
Porter, Frederick Wadsworth	*bs*	*Springfield*	A T Ω House
Powers, Clarence Schlayer	*bs*	*Meriden, Conn.*	East, 19
Proctor, Percy Maynard	*bs*	*N. Cambridge*	Dean, 13
Rindge, Wellington	*bs*	*Cambridge*	Θ Λ X House
Savage, Harold Richardson	*bs*	*Medford*	Δ Υ House
Scott, Clinton Lee	*ab-bd*	*Newport, Vt.*	Paige, 24
Smith, Parker Bradstreet	*bs*	*Auburn, Me.*	Dean, 9
Sturtevant, Leon Josiah	*bs*	*Lexington*	Z Ψ House
Tower, Henry Edward	*bs*	*Hudson*	A T Ω House
Towsley, Frank Hathaway	*ab*	*Washington, Vt.*	West, 9
Turner, Nelson Webster	*bs*	*Ayer*	West, 1

Sophomore Class

Aldrich, Lloyd Edgar	*ab*	*Rutland, Vt.*	Dean, 1
Angell, George William	*bs*	*Syracuse, N. Y.*	West, 18
Babcock, Lester Fowler	*bs*	*Lynn*	East, 17
Barnes, Maxwell Fish	*bs*	*W. Somerville*	West, 25
Billingham, Arthur	*bs*	*Jamaica Plain*	*15 Goldsmith St.*
Brooks, William Gooch	*bs*	*Dorchester Centre*	East, 20
Burritt, Henry Way	*bs*	*Detroit, Mich.*	Dean, 12
Chandler, Warren Rufus	*bs*	*Medford*	East, 29
Chapman, Wilder Adams	*bs*	*Brighton*	*50 Brooksdale Rd.*
Cosgrove, Frederick Sylvester	*bs*	*Medford*	Δ Υ House
Hodges, Theodore Warren	*bs*	*Lynn*	Dean, 12
Houston, Clarence Preston	*bs*	*Methuen*	Θ Δ X House
Jeffress, James Alfred	*bs*	*West Medford*	*37 Lincoln St.*
Kelley, Wilfred Frederick	*ab*	*Roxbury*	*1 Arcadia St.*
Leahy, John Henry	*ab*	*Monson*	Σ T A House
Levethan, Samuel Theodore	*bs*	*Manchester, N. H.*	22 N. Russell St., Boston
Lindstol, Carl Frederick	*bs*	*Beachmont*	East, 30
Lybeck, Robert Ferdinand	*bs*	*Everett*	East, 25
MacPherson, Edmund Stow	*bs*	*Maynard*	East, 29
Marzynski, Philip	*bs*	*Dorchester*	*9 Leroy St.*
Metcalf, Herbert Edmond	*bs*	*Winchester*	*3 Crescent Rd.*
Morison, Frederick Stanley	*bs*	*W. Somerville*	*2 Billingham St.*
Phillips, Arthur Welch	*bs*	*Somerville*	*10 Prospect Hill Ave.*
Phillips, Ralph Oliver	*bs*	*Somerville*	*10 ProspectHill Ave.*
Prescott, Clarence Dean	*ab*	*Haverhill*	Σ T A House
Priest, Henry Benjamin	*ab*	*Irasburg, Vt.*	Dean, 14
Richardson, William Blaine	*bs*	*Fisher's Island, N.Y.*	East, 34

Ricker, George Alvan	*bs*	*South Poland, Me.*	Θ Δ Χ House
Sullivan, Harry Matthew	*bs*	*Ayer*	West, 28
Tonkonow, Benjamin	*ab*	*Meriden, Conn.*	East, 33
Whitney, Donald Hay	*bs*	*W. Somerville*	*38 Wallace St.*
Wood, Robert Earle	*bs*	*Orange*	Α Τ Ω House

Freshman Class

Anderson, Carl Oscar	*ab*	*S. Manchester, Conn.*	East, 16
Armstrong, Herbert Eustace	*bs*	*Cambridge*	Dean, 8
Banquer, Jacob	*bs*	*Roxbury*	*190 Harold St.*
Barron, Ralph Avery	*bs*	*Wellesley Hills*	Dean, 1
Bisbee, John Bancroft	*bs-bd*	*Arlington Heights*	Paige, 30
Chandler, Charles Hallstram	*bs*	*West Newton*	West, 5
Clavell, Antonio Cepero	*bs*	*Ponce, Puerto Rico*	11 Appleton St., Somerville
Davis, Chester Thomas Caverly	*bs*	*Wolfeboro, N. H.*	East, 4
Doherty, Gerald Leo	*ab*	*Dorchester*	*36 Mayfield St.*
Donnellan, Arthur Vincent	*bs*	*W. Medford*	*30 Lincoln St.*
Feeley, Edward	*bs*	*Brookline*	*23 Babcock St.*
Files, James Holden	*ab*	*Portland, Me.*	Θ Δ Χ House
Flagg, Frederick Potter	*bs*	*Waltham*	*20 Floyd St.*
Flett, James Watson	*bs*	*Waverley*	*596 Trapelo Rd.*
Foster, Francis Joel	*ab*	*Danbury, Conn.*	East, 24
Freitas, Paulo Rangel de	*ab*	*Sao Paulo, Brazil*	357 Boston Ave., Tufts College
French, Herbert Moulton	*ab*	*Waltham*	East, 21
Fuller, George Lester	*ab*	*Braintree*	Dean, 10
Gendron, Courtenay Holbrook	*ab*	*Winchester*	*22 Calumet Rd.*
Golden, Edward	*bs*	*East Boston*	*143 Saratoga St.*
Gore, Edward Watson	*ab*	*W. Medford*	*45 Brooks St.*
Hawthorne, Chauncey LeMoyne	*bs*	*Mt. Pleasant, Ohio*	West, 7
Hayes, Elliot Wright	*bs*	*Winthrop*	*31 Trident Ave.*
Hewitt, Earl Smith	*ab*	*So. Royalton, Vt.*	West, 9
Hill, Kenneth Rogers	*bs*	*Peabody*	East, 14
Hornstein, Harold	*ab*	*E. Boston*	*34 Summer St.*
Jones, Percival	*bs*	*Cambridge*	*9 Concord Ave.*
Knowlton, Benjamin Almy	*bs*	*W. Newton*	West, 1
Kraus, Benjamin Franklin	*bs*	*Jamaica Plain*	*16 Ophir St.*
Krepps, Raymond M.	*bs*	*Waynesboro, Penn.*	Dean, 8
Lamont, Arthur Lindley	*ab*	*W. Somerville*	*13 Conwell Ave.*
Lee, Bernard James	*ab*	*Irasburg, Vt.*	Dean, 3
MacIver, Carence Roscoe	*bs*	*Graniteville, Vt.*	East, 34
Martin, Herbert	*bs*	*Bay-de-Verde, Newfoundland*	*172 Walnut St., Watertown*

McAdoo, Myron Holder Ward	*bs*	*Cambridge*	*278 Harvard St.*
McJannet, Donald Ross	*bs*	*Medford*	*1 Curtis Place*
Messer, Melvin John, Jr.	*bs*	*Somerville*	*27 Franklin St.*
Mitchell, Walter Edward	*bs*	*Newport, Vt.*	West, 8
Morison, Norman Webster	*bs*	*West Somerville*	*58 Raymond Ave.*
Morrison, Arthur Winchester	*ab*	*Medford*	West, 25
Murphy, Leo Thomas	*bs*	*Somerville*	*28 Mt. Vernon St.*
Nellis, Aubrey Irving	*bs*	*Roslindale*	*14 Westbourne St.*
Nelligan, Henry Philip	*bs*	*Cambridge*	*413 Washington St.*
Patterson, Richard	*ab*	*Morgantown, W. Va.*	Paige, 31
Phalen, Harold Otis	*bs*	*Arlington*	*8 Marathon St.*
Poole, Joseph Ellsworth	*bs*	*Dover*	West, 14
Pratt, Kenneth Madison	*bs*	*Winchester*	*15 Wildwood St.*
Proctor, Leonard Eldredge	*ab*	*Swampscott*	West, 5
Proctor, William Harrison	*bs*	*Jackson, N. H.*	East, 7
Reed, Harold Leighton	*ab*	*Waltham*	*23 Wellington St.*
Robbins, Roger Sherman	*bs*	*E. Pepperell*	Θ Δ Χ House
Roche, Harold Francis	*bs*	*South Boston*	*34 F St.*
Ryan, Frederick Lynne	*bs*	*Denair, Calif.*	East, 24
Sample, Dirrell Daniel	*bs*	*Strong, Me.*	East, 4
Smith, Christopher Ilsley	*ab*	*Chatham*	West, 32
Smith, John Blackmer	*bs*	*Williamstown, Vt.*	West, 16
Smith, Richard Ilsley	*bs*	*Auburn, Me.*	Dean, 9
Spencer, Clayton Cree	*bs*	*Barre, Vt.*	West, 16
Stafford, Henry Alexander	*bs*	*Orleans, Vt.*	Paige, 19
Staples, Carl Weston	*ab*	*Everett*	*17 Lexington St.*
Starkweather, Courtney Nash	*bs*	*Plainfield, N. J.*	West, 4
Stewart, Robert Howard	*bs*	*Webster*	East, 13
Swenson, Albert Walter	*ab*	*Medford*	*47 Newbern Ave.*
Taylor, Irving Proctor	*bs*	*Somerville*	West, 19
Teele, Kenneth Robert	*bs*	*San Juan, P. R.*	West, 8
Tennis, Max	*bs*	*Boston*	*66 Pleasant St.*
Town, Cecil Benton	*bs*	*Boston*	*94 Waltham St.*
Wiggin, Sidney Cushing	*bs*	*Roxbury*	*9 Weld Ave.*
Willey, Nathaniel Whelock	*ab*	*Saugus*	*41 Vine St.*
Yeamans, Harvey Cedric	*bs*	*Meriden, Conn.*	East, 32

Special Students

Allen, Windom Alpheus II. *Medical Preparatory*	*W. Cummington*	Α Τ Ω House
Cross, Julian Richard I. *Medical Preparatory*	*Hingham Center*	West, 19
Currier, Paul Leslie II. *History and Economics*	*Everett*	*11 Locust St.*

Fisher, Herbert Robson II. *Music*	*W. Somerville*	*26 Hancock St.*
Gately, Lynde I. *Medical Preparatory*	*Melrose*	*20 Circuit St.*
Hayes, Arthur Douglas, Jr. I. *Medical Preparatory*	*Waltham*	*733 Main St.*
Larson, Walfred Isador I. *Medical Preparatory*	*Hartford, Conn.*	87 Bristol Rd.
Little, Andrew Dodge I. *Medical Preparatory*	*Medford*	West, 8

Unclassified Students

Crosby, Philip Barker	*bs*	*Methuen*	West, 30
Hill, Johnson Washington	*ab*	*Boston*	*309 Columbus Ave.*
Lincoln, Proctor Prince	*ab*	*Brookline*	West, 30
Murphy, Maurice Francis	*ab*	*East Boston*	*79 White St.*
Snyder, Raymond B	*ab*	*Van Wert, Ohio*	3 Ware Hall, Cambridge

Supplementary List

(Students present during 1911–1912, but not appearing in the catalogue)

Hemenway, Loring Spaulding	*bs*	*Providence, R. I.*	Dean, 13
Huntington, Paul Osborne	*bs*	*Ayer*	Δ Υ House

Engineering School

Senior Class

Atwater, Ralph Wight	*ch e*	*Somerville*	*1 Avon St.*
Bush, Vannevar	*ee*	*Chelsea*	Α Τ Ω House
Colman, Roger Ammiel	*ch e*	*Somerville*	West, 23
Dennett, George Franklin	*ce*	*Cambridge*	West, 2
Etheridge, Harold Lowell	*ee*	*Somerville*	West, 7
Fairbanks, Frank Bates	*ab-e*	*Passaic, N. J.*	Δ Υ House
Fisher, George	*me*	*Boston*	West, 29
Flint, Fred Warren	*ce*	*W. Somerville*	*22 Dover St.*
Freeman, Harris Howard	*ce*	*Somerville*	*24 Bonner Ave.*
Fuller, Philip Ely	*ce*	*Thorndike*	Commons Club
Goodwin, Joseph Michael	*ee*	*Malden*	*52 Porter St.*
Gould, Charles Thomas	*me*	*Cambridge*	*35 Tufts St.*
Hartshorn, Carl Larrabee	*ch e*	*W. Somerville*	59 Irving St.
Hazeltine, Burt Alden	*st e*	*Ludlow, Vt.*	Δ Τ Δ House
Hooper, Allen Gunnison, A.B.	*ee*	*Tufts College*	*124 Professors Row*

Jones, Walter Leverett	*ee*	*Somerville*	*8 Pleasant Ave.*
Lawlor, James Joseph	*ce*	*Chelsea*	*57 Crescent Ave.*
Lloyd, George Adolph	*st e*	*Somerville*	*68 Albion St.*
Lovering, Stanley Hutchinson	*ee*	*W. Medford*	*42 Harvard Ave.*
Mansfield, Robert Chapman	*ce*	*Swampscott*	Σ Τ Α House
Marden, Leslie Ona	*ce*	*W. Somerville*	West, 10
McAuliffe, John Augustin	*ce*	*Dorchester*	Σ Τ Α House
Nolan, Conrad	*st e*	*Tufts College*	*120 Curtis St.*
Parker, Levi Wright	*ee*	*Somerville*	*45 Dartmouth St.*
Phelps, Harry Louis	*ce*	*Marlboro*	Commons Club
Phillips, Wendell Codding	*ee*	*Dedham*	Α Τ Ω House
Roberts, Raymond Moulton	*st e*	*Melrose Hlds.*	*124 Franklin St.*
Sargent, Ralph Edward	*st e*	*Annisquam*	Commons Club
Searle, Dana Aubrey	*me*	*Franklin*	Commons Club
Sokoll, Jacob Max	*ce*	*Boston*	West, 6
Sterling, Lewis Edwin	*ce*	*Tufts College*	Δ Τ Δ House
Strecker, Harry Louis	*ee*	*Roxbury*	West, 6
Stryker, Henry Bernard	*ee*	*Cambridge*	Δ Τ Δ House
Taylor, Prentiss Willard	*ce*	*Hinsdale, N. H.*	Commons Club
Tosi, Joseph Andrew	*st e*	*Revere*	Δ Υ House
Weaver, Frederic Nixon	*st e*	*Dorchester*	Σ Τ Α House
Whippen, Leonard Swan	*st e*	*Kingston, N. H.*	Σ Τ Α House

Junior Class

Abbott, Porter Sheldon	*ch e*	*Somerville*	37 Sawyer Ave
Avery, Walter Roger	*st e*	*Somerville*	*29 West St.*
Ayer, Perley Fay	*st e*	*Portland, Me.*	Θ Δ Χ House
Azevedo, Renato de Almeida	*ee*	*Sao Paulo, Brazil*	96 Packard Ave., W. Somerville
Bennett, William Joseph	*ee*	*W. Medford*	*65 Lincoln St.*
Carlson, Carl Oscar	*ch e*	*Quincy*	Paige, 13
Crispin, Russell Milton	*ce*	*W. Somerville*	*31 Chandler St.*
Eastman, Fred Cecil	*me*	*Swampscott*	Δ Τ Δ House
Emerson, Carl	*ee*	*Hartford, Conn.*	Δ Υ House
Faden, James Leatherbee	*ee*	*Waltham*	Δ Υ House
Ford, Frederick William, Jr.	*st e*	*Tufts College*	Α Τ Ω House
Foss, Clarence Wardwell	*ee*	*W. Lynn*	Δ Τ Δ House
French, Joseph Allen	*ee*	*Waltham*	Δ Υ House
Garabedian, Carl Arshag	*ch e*	*Dorchester Center*	Paige, 27
Gardella, John Louis	*ee*	*Brookline*	*115 Washington St.*
Geer, Everett Austin	*ee*	*Three Rivers*	Α Τ Ω House
Gurvin, John Edward	*ce*	*Somerville*	*606 Broadway*
Hayward, Alfred Webster	*ce*	*W. Somerville*	Δ Υ House

Henderson, William Davis	*ce*	*Tomkinsville, N. Y.*	East, 27
Hill, Ralph Weston	*st e*	*Peabody*	Commons Club
Hurley, William Joseph	*ce*	*Belmont*	*20 Cross St.*
Kearns, William Henry	*ce*	*Waverley*	*88 Beech St.*
Kelley, Walter Leonard	*ee*	*Arlington*	Δ Υ House
Kett, Timothy Justin	*ce*	*Fair Haven, Vt.*	East, 1
Marshall, Edward Lester	*st e*	*Lynn*	East, 19
Mastrangelo, Michael Joseph	*st e*	*Boston*	East, 11
Miller, Everett Burton	*ee*	*Meriden, Conn.*	Ζ Ψ House
Monighan, Joseph Albert	*ce*	*Somerville*	*21 Prichard Ave.*
O'Meara, Francis	*ch e*	*Brighton*	*72 Mapleton St.*
O'Neill, Carroll Charles	*st e*	*Allston*	West, 12
Power, Harold James	*ee*	*Everett*	*18 Clinton St.*
Prentiss, Joseph Adams	*ee*	*Belmont*	*206 Prospect St.*
Ramsay, Harold Southwood	*ee*	*Portland, Me.*	West, 31
Rice, Perley Augustus	*st e*	*W. Somerville*	*33 Claremon St.*
Rutter, Josiah Baldwin	*st e*	*Waltham*	Δ Υ House
Sanborn, Ray Conway	*me*	*Dorchester*	Commons Club
Sanerib, Jacob	*ce*	*Roxbury*	*41 Paul Gore St.*
Shea, Thomas Arthur	*ch e*	*Stoneham*	East, 3
Shiels, Joseph Daniel	*ch e*	*Jamaica Plain*	*55 Dunster Rd.*
Silverman, Max	*ce*	*Dorchester*	*26 Lawrence Park*
Stafford, Roland Grover	*ce*	*Attleboro*	Α Τ Ω House
Stewart, Arthur David	*me*	*Hopkinton*	West, 11
Tegan, Michael Joseph, Jr.	*ce*	*Charlestown*	*23 Green St.*
Terhune, Howard Haven	*st e*	*Dorchester*	East, 11
Whittemore, Francis Dyer	*ch e*	*Everett*	West, 16½

Sophomore Class

Abbott, Robert Leon	*e*	*West Medford*	*108 Sharon St.*
d'Albergaria, José Soares	*e*	*Azores Islands*	East, 12
Archibald, Harry Cameron	*e*	*Everett*	*163 Hancock St.*
Ball, Lester Whiting	*e*	*Somerville*	*21 Melvin St.*
Boothby, Everett James	*e*	*Somerville*	*95 Pearl St.*
Brown, James Lawrence, Jr.	*e*	*Somerville*	*89 Morrison Ave.*
Claff, Elmer Louis	*e*	*Everett*	West, 13
Comee, Edgar Randolph	*e*	*Cliftondale*	East, 9
Dana, Alan Standish	*e*	*Portland, Me.*	West, 21
Danver, Alan Thurston	*e*	*Glenbrook, Conn.*	East, 2
Eldredge, Earle Bertram	*e*	*So. Harwich*	Σ Τ Α House
Ellis, Frederick Joseph	*e*	*Somerville*	East, 15
Ellms, Carlton Warren	*e*	*S. Sudbury*	Δ Υ House
Fiske, Warren Munroe	*e*	*Mexico City*	West, 4

Fittz, Raymond Underwood	*e*	*Natick*	East, 26
Fox, Erving Nelson	*e*	*W. Somerville*	*123 College Ave.*
Grupe, Howard Edwin	*e*	*New Canaan, Conn.*	Ζ Ψ House
Harrington, Ralph Dudley	*e*	*Somerville*	*26 Oak St.*
Harrison, James William	*e*	*East Walpole*	East, 9
Horn, Albert Mathias	*e*	*Roslindale*	*103 Ardale St.*
Jackson, Henry Olin	*e*	*Southbridge*	Δ Τ Δ House
Jameson, Charles Franklin	*e*	*W. Somerville*	*57 Lowden Ave.*
Jameson, Robert	*e*	*Revere*	*28 Olive St.*
Kearney, Paul Thomas	*e*	*Lowell*	Α Τ Ω House
Locke, Edwin Augustus	*e*	*Belmont*	*25 Somerset St.*
Maguire, James Bernard	*e*	*E. Boston*	*233 Saratoga St.*
Mendelsohn, Louis Edward	*e*	*Roxbury*	West, 27
Merrithew, Francis Marion Blaisdell	*e*	*Saugus*	Α Τ Ω House
Moore, Charles Edward	*e*	*Peabody*	Ζ Ψ House
Moses, Eliot Brewster	*e*	*Waltham*	*Worcester Lane*
Neale, John Arthur	*e*	*Cliftondale*	East, 5
Newton, Raymond Willis	*e*	*Winter Hill*	*27 Everett Ave.*
Palumbo, Emilio Leonard	*e*	*Boston*	4 North Sq.
Peabody, William Tyler	*e*	*Melrose*	*50 Florence St.*
Pease, Maxfield	*e*	*Tufts College*	*205 College Ave.*
Peterson, Leon William	*e*	*Everett*	*15 Carter St.*
Rosenkovitz, Edward	*e*	*E. Boston*	*197 Chelsea St.*
Rourke, Francis William	*e*	*Coneord, N. H.*	East, 28
Schlotterbeck, William Charles	*e*	*Roxbury Station, Conn.*	East, 28
Shorrock, John William	*e*	*Dorchester*	*39 Longfellow St.*
Snow, Herbert Endicott	*e*	*Brooklyn, N. Y.*	East, 31
Stanger, Herbert Theophilus	*e*	*Roslindale*	Δ Τ Δ House
Swan, Reuben	*e*	*Dorchester Centre*	East, 26
Teel, Lawrence Howes	*e*	*Salem*	West, 3
Thorndike, Kinsley Barrett	*e*	*Medford*	*68 Harvard St.*
Torrey, William Henshaw	*e*	*Spencer*	Α Τ Ω House
Ulin, Benjamin	*e*	*Roxbury*	*37 Fort Ave.*
Wagner, Paul Barr	*e*	*Brooklyn, N. Y.*	East, 31
Waldron, Arthur Scott	*e*	*W. Somerville*	*135 Powder House Boulevard*
Walsh, Louis Joseph	*e*	*Charlestown*	West, 21
Ward, Benjamin Alpheus Jr.,	*e*	*W. Somerville*	*22 Milton St.*
Webber, Lewis Gleason	*e*	*Bedford*	*Main St.*

Freshman Class

Achorn, John Wesley	*e*	*Allston*	*78 No. Beacon St.*
Anderson, Herbert Keith	*e*	*Milford, N. H.*	West, 28
Armington, Ralph Loud	*e*	*Everett*	*15 Hampshire St.*

Ayers, Charles Frank	*e*	*Everett*	*101 Chestnut St.*
Boss, John Harold	*e*	*Wellington*	*18 Fourth St.*
Buckley, John Francis	*e*	*Arlington*	*28 Beacon St.*
Bulwinkle, George Edward	*e*	*Tampa, Fla.*	30 Mt. Auburn St. Cambridge
Coleman, Thomas Christopher, Jr.	*e*	*Somerville*	*29 Chandler St.*
Cross, Ralph Upton	*e*	*Worcester*	West, 24
Dalton, George Alonzo	*e*	*W. Somerville*	*97 Bromfield Rd.*
Demeritt, John Edgar	*e*	*Boston*	Α Τ Ω House
Dempsey, Nelson William	*e*	*Stoneham*	155 College Ave., W. Somerville
Dewhirst, Theodore Henry	*e*	*Groveland*	East, 16
Ferguson, David	*e*	*Methuen*	East, 5
Gabrielson, Samuel	*e*	*Lawrence*	111 Webster St., E. Boston
Garde, Leslie Eames	*e*	*Lynn*	*155 Shepard St.*
Goldberg, Max	*e*	*Boston*	*42 E. Dedham St.*
Hall, Edward Franklin	*e*	*Lynn*	East, 18
Halpin, Henry Edwar	*e*	*Somerville*	*59 Albion St.*
Hamilton, Harold Sylvestor	*e*	*Saugus*	East, 18
Herald, Charles Raymond	*e*	*Everett*	*27 Dean St.*
Heys, George Harold	*e*	*Lynn*	Dean, 2
Hinchcliffe, Paul George	*e*	*Stoneham*	West, 13
Holden, Dudley Furber	*e*	*Somerville*	West, 23
Holden, James Henry	*e*	*Roxbury*	East, 18
Holland, Gordon Fraser	*e*	*Revere*	East, 33
Hunt, Everett Currie	*e*	*Somerville*	*40 Franklin St.*
Hussey, William Horner	*e*	*Danvers*	Commons Club
Jenkinson, Egbert William Ashford	*e*	*Brookline*	West, 15
Katz, Henry Leon	*e*	*Malden*	West, 29
Keyes, William Arthur	*e*	*Lynn*	*177 Fayette St.*
Leach, Henry Stewart	*e*	*Brookline*	Dean, 2
Lee, Cedric Crandon	*e*	*Everett*	*227 Bradford St*
Lutz, William Edmund Aloysius	*e*	*Somerville*	*102 Prospect St.*
Macks, William Arthur	*e*	*Beverly*	Α Τ Ω House
McLellan, Robert Leston	*e*	*Dorchester*	*10 Oakley St.*
Mishel, William Joseph	*e*	*Beachmont*	East, 6
Mota, Joas Ignacio Silveira da	*e*	*S. Paulo, Brazil*	357 Boston Ave., Tufts College
Nicoll, George Wesley	*e*	*Boston*	Σ Τ Α House
Nixon, Alexander Clifford	*e*	*Brookline*	West, 15
Pennucci, Conrad	*e*	*East Boston*	*115 Neptune Ave.*
Perkins, Kaler Alfred	*e*	*E. Saugus*	Σ Τ Α House
Poor, Joseph Victor	*e*	*Petersham*	West, 3
Powers, Clinton Russell	*e*	*Portland, Me.*	West, 32

Reed, Arthur Bryant	*e*	*Claremont, N. H.*	East, 21
Reed, Everett Lenox	*e*	*Somerville*	*100 Jaques St.*
Sherburne, Raymond Franklin	*e*	*St. Johnsbury, Vt.*	East, 34
Stowell, Edson Bancroft	*e*	*Jamaica Plain*	*14 Pond St.*
Taylor, Raymond Clyde	*e*	*Arlington Heights*	*118 Hillside Ave.*
Thomson, Gerald Whalley	*e*	*Swampscott*	*85 Reddington St.*
Towne, Lester Newton	*e*	*Andover*	East, 23
Upton, Charles Hastings	*e*	*Arlington Heights*	*27 Harvard St.*
Voss, William Charles	*e*	*Hartford, Conn.*	East, 14
Walker, William Edward	*e*	*Orange*	West, 14
Wang, Ting Fen	*e*	*Peking, China*	357 Boston Ave., Medford
Webb, Richard Bruce	*e*	*Washington, D. C.*	East, 23

Special Student

Foster, Clarence L. I. *Mathematics*	*Somerville*	*48 Hudson St.*

Unclassified Students

Eastman, Arthur Gilman	*e*	*Townsend*	8 St. James Ave., Boston
Hadley, Harold Elliot	*e*	*Cambridge*	*58 Trowbridge St.*
Leary, John J.	*e*	*Newton*	*32 Channing St.*
Schwartz, Karl Karl	*e*	*Cambridge*	*12 Jordan Place*
Scrannage, Lawrence Emery	*e*	*Medford*	*83 Dudley St.*
Wilson, Earl Snow	*e*	*Hyannis*	East, 22

Supplementary List

(Students present during 1911–1912, but not appearing in the catalogue)

Ferraz, Raul de Oliveira	*e*	*Sao Paulo, Brazil*	90 Curtis St., W. Somerville
Henderson, William Davis	*e*	*Tomkinsville, N. Y.*	Paige, 23

Bromfield-Pearson School

Copp, John Irving	*Cambridge*	*23 Inman St.*
Delano, Chauncey Lewis	*Worcester*	West, 10
Ekdahl, Edwin N.	*Nashua, N. H.*	9 Yale St., Medford
Esten, Edwin Chandler	*Littleton*	15 Orchard St., Medford
Fairbank, John William	*Cambridge*	East, 8
O'Connor, Arthur Maxwell	*Revere*	East, 6
Parsons, Oliver Wolcott	*New York City, N. Y.*	78 Bromfield Rd., W. Somerville
Wilson, William Wilroy	*Cambridge*	East, 8

Theological School

SIX-YEAR COURSE

Fourth Year

Gaskin, William	*Stafford, Conn.*	Paige, 25

Third Year

Harvey, Will Calvin	*Newfane, Vt.*	Paige, 18
Scott, Clinton Lee	*Newport, Vt.*	Paige, 24

Second Year

Bisbee, John Bancroft	*Arlington Heights*	Paige, 30

Special Students

MacInnis, Peter John	*S. Hanson*	Paige, 29
Orito, Joseph Chusaku	*Hakido, Japan*	Paige, 14
Paige, Lucius Robinson	*Malden*	*19 Sprague St.*

Supplementary List

(Student present during 1911–1912, but not appearing in the catalogue)

Kelly, Lawrence Rogers	*Brighton*	*1 Foster St.*

Jackson College

Senior Class

Bartlett, Dorothy	*ab*	*Lynn*	Richardson, 4
Berthold, Louise Anna	*ab*	*Saugus*	*392 Main St.*
Chapin, Octavia	*ab*	*Medford*	Start, 3
Colby, Marion Adeline	*ab*	*Hillsboro, N. H.*	Metcalf, 13
Dodd, Mary Helen	*bs*	*Lexington*	Metcalf, 10
Field, Abby Howard Rugg	*ab*	*Tufts College*	Metcalf, 8
Gray, Inez Marion	*ab*	*Portsmouth, N. H.*	Richardson, 11
Greenberg, Rose	*ab*	*W. Somerville*	*18 Rogers Ave.*
Lovejoy, Esther Lizzie	*ab*	*W. Somerville*	*62 Rogers Ave.*
Owler, Isabella Gertrude	*ab*	*Somerville*	*30 Browning Rd.*
Penniman, Ruth Evelyn	*ab*	*Peabody*	Metcalf, 9
Sanborn, Edith May	*ab*	*Amesbury*	Start, 3
Scammon, Helen Rachel	*ab*	*Stratham, N. H.*	Metcalf, 12
Shepard, Ruth	*ab*	*Wakefield*	Metcalf, 16
Waterman, Charlotte Jane	*ab*	*Tufts College*	Metcalf, A
Wiley, Alma Gertrude	*ab*	*W. Somerville*	*761 Broadway*

Junior Class

Buck, Margaret	*ab*	*Lexington*	*20 Forest St.*
Cameron, Isabella	*ab*	*Arlington*	*59 Mt. Vernon St.*
Cobb, Gladys Lydia	*ab*	*Mansfield*	Start, 5
Cochran, Edith Elizabeth	*ab*	*Bath, Me.*	Richardson, 1
Dyer, Gertrude Weston	*ab*	*Provincetown*	Metcalf, 4
Eveleth, Emily	*ab*	*Little Falls, N. Y.*	Start, 4
Fallis, Ethel Hazel	*bs*	*W. Somerville*	Start, 6
Hearsey, Helen Elizabeth	*ab*	*Gleasondale*	Metcalf, 4
Hooper, Anne Leslie	*ab*	*Tufts College*	*124 Professors Row*
Hulen, Emma	*bs*	*Cliftondale*	Richardson, 1
Kagan, Frances	*ab*	*Roxbury*	*39 Stanwood St.*
Macy, Ella Hazel	*ab*	*Winter Hill*	*3 Miner St.*
Phillips, Etta Marion	*bs*	*Lowell*	Metcalf, B
Roberts, Marjorie	*ab*	*Reading*	Metcalf, 2
Scamman, Eleanor Margaret	*ab*	*Lexington*	*76 Bedford St.*
Wells, Edna Frances	*ab*	*Roslindale*	*36 Ardale St.*

Sophomore Class

Cate, Esther Safford	*ab*	*Barre, Vt.*	8 Teele Ave., W. Somerville
Cragin, Bernice Willette	*ab*	*Worcester*	Start, 5
Crocker, Helen Beatrice	*bs*	*Portland, Me.*	Metcalf, C
Davis, Marion Hill	*ab*	*Bloomfield, N. J.*	Metcalf, 7
Fessenden, Margaret Tebbetts	*bs*	*Ashfield*	Metcalf, 1
Gerry, Gladys Eleanor	*ab*	*Sudbury Centre*	Metcalf, 3
Hamilton, Dorothy James	*ab*	*Cambridge*	*95 Avon Hill St.*
Hea, Margaret Hildred	*ab*	*Medford*	*85 Summer St.*
Hooper, Gertrude Mellen	*ab*	*Tufts College*	*124 Professors Row*
Johnson, Edith Harriet	*ab*	*Andover*	Metcalf, 7
Keith, Gladys Ethlya	*ab*	*Tufts College*	*89 Capen St.*
MacKnight, Annette Bassford	*ab*	*New York City, N. Y.*	Metcalf, 3
Moyer, Pauline	*bs*	*Hartford, Conn.*	Metcalf, 6
Nichols, Marian Bill	*ab*	*Hathorne*	Richardson, 4
Peabody, Ethel Lorinda	*ab*	*W. Somerville*	*80 Wallace St.*
Pulsifer, Alice Cook	*ab*	*Campton, N. H.*	Metcalf, C
Rockwell, Grace Margaret	*ab*	*W. Somerville*	*133 Powder House Boulevard*
Shepard, Aurilla Myrtle	*ab*	*Mansfield*	Richardson, 8
Wallis, Ruth	*ab*	*Fall River*	Metcalf, 2

Freshman Class

Anderson, Mildred Elvera	*ab*	*Stronghurst, Ill.*	Metcalf, 3
Bixby, Madeleine	*bs*	*North Andover*	Metcalf, 12
Boutelle, Bertha Josephine	*ab*	*Woburn*	*138 Montvale Ave.*
Burbank, Ruth	*ab*	*Lynn*	Start, 1
Butler, Helen Louise	*bs*	*W. Medford*	Metcalf, 1
Cavanaugh, Mary Eleonor	*bs*	*W. Lynn*	*13 Cedar St.*
Chipman, Lucille Horton	*ab*	*Provincetown*	Metcalf, 11
Clarke, Geraldine Kendall	*ab*	*Ogdensburg, N. Y.*	Metcalf, 6
Cotton, Alice Mae	*ab*	*Arlington*	*1054 Massachusetts Ave.*
Cragin, Margaret	*ab*	*West Somerville*	*48 Meacham Rd.*
Cutler, Dorothy Bascom	*ab*	*East Jaffrey N. H.*	Richardson, 6
Dailey, Mary Elizabeth	*bs*	*Lexington*	*State Road*
Dole, Mary Clementine	*ab*	*Enfield, N. H.*	Richardson, 5
Dudley, Florence Lillian	*ab*	*Reed's Ferry, N. H.*	Metcalf, 13
Duffey, Pauline	*ab*	*Medford*	*67 Dudley St.*
Emerson, Mildred	*ab*	*Lowell*	Start, 1
Gardner, Mary Violetta	*ab*	*New Bedford*	Metcalf, 14
Greenwood, Rena Mae	*bs*	*Medford*	*347 Main St.*
Hagerty, Aileen Alberta	*ab*	*Woburn*	Metcalf, 10

Hall, Marion	*ab*	*Salem Depot, N. H.*	Metcalf, 15
Harrington, Isabel	*ab*	*Medford*	*259 Spring St.*
Hart, Dorothy	*ab*	*Medford*	*57 Logan Ave.*
Houghton, Dorothy Taylor	*ab*	*No. Andover*	Start, 4
Huntington, Adeline Parmelee	*ab*	*Lynn*	Start, 7
Keir, Avis Jeannette	*ab*	*Craftsbury, Vt.*	Richardson, 5
MacCarthy, Ruth	*ab*	*Malden*	*1015 Salem St.*
Matheson, Mabel Knowles	*ab*	*Provincetown*	Metcalf, 11
Noyes, Christine Blanche	*ab*	*Lexington*	*5 Tewkesbury St.*
Osborn, Emilie Poor	*bs*	*Peabody*	Metcalf, 15
Piper, Lydia Josephine	*ab*	*S. Biddeford, Me.*	Start, 7
Savary, Edna Louise	*ab*	*Somerville*	*7 Landers St.*
Schofield, Jeannette Irene	*ab*	*Jamaica Plain*	Richardson, 3
Seavey, Ruth Eliza	*bs*	*Tufts College*	*217 College Ave.*
Siebert, Margaret	*ab*	*Hyde Park*	Richardson, 3
Terry, Helen	*ab*	*E. Bloomfield, N. Y.*	45 Sawyer Ave.
Wood, Bernice Ethel	*bs*	*Charlestown*	*72 High St.*

Special Student

Frizzell, Ethel May		*Woburn*	*20 Garfield Ave.*

Unclassified Students

Bisbee, Eleanor	*ab*	*Arlington Heights*	Richardson, 2
Knight, Anna Chatfield	*ab*	*Melrose Highlands*	*132 Melrose St.*
Schnur, Elizabeth Brumley	*ab*	*Warren, Pa.*	Richardson, 9
Wallis, Freda	*ab*	*North Beverly*	Metcalf, 15
Welch, Alice Ruth	*ab*	*Bethel, Vt.*	66 Rogers Ave., West Somerville

Medical School

[P. O. Address, 416 Huntington Ave., Boston, Mass.]

Fourth Year

Allen, Arnold Noble	*Roslindale*
Allen, Harold Musgrave	*Boston*
Armitage, Henry George	*Haverhill*
Bagnall, Elmer Stanley	*Roslindale*
Bailey, Roland, M.D.	*Jamaica Plain*
Bass, Harris	*Plymouth*
Bishop, William Atkins	*Somerville*
Brady, Cecil Norbert	*Boston*
Bresnihan, Frank Nesdel	*Cambridge*
Brosius, Otto Tiemann	*Belleville, Ill.*
Brown, Alfred Whittemore	*Quincy*
Browne, William Edward	*Roxbury*
Brunick, Patrick Vincent	*S. Boston*
Burke, John Henry	*Rockland*
Cabeceiras, Henry Joseph	*Somerville*
Caldicott, Francis Stephen	*Milford*
Chamberlin, Harold Augustus	*N. Abington*
Chronquest, Alfred Peter	*Boston*
Clarke, Mary Ella	*Ward Hill*
Comstock, Fred Walter	*New Haven, Conn.*
Connor, Harold James	*Woodstock, N. B.*
Costello, James Francis	*Wollaston*
Covey, Clyde Benjamin	*Buffalo, N. Y.*
Cowles, Dwight	*Beverly*
Cox, Oscar Francis, Jr.	*N. Weymouth*
Cullen, Charles Andrew	*Hyde Park*
Currin, Francis Walter	*Peabody*
Deacy, John Joseph	*Lawrence*
Driscoll, Robert Ellsworth	*Cambridge*
Felch, George Alfred	*Ayer*
Flynn, John Henry	*Salem*
Fraim, Irving William	*Waltham*
Friedman, Benjamin	*Boston*
Friedman, Eli	*Boston*
Gilmore, Lewis Daniel	*Exeter, N. H.*
Goetschius, Percy Berry	*New York, N. Y.*
Grogan, Margaret Victorine	*W. Swanzey, N. H.*

Gunter, Fred Clarke	*Somerville*
Guthrie, Andrew Doherty	*Roxbury*
Haley, William Thomas	*Marblehead*
Hassman, David Morris PHARM.D. (Phila. Coll. Ph.)	*Reading, Pa.*
Healey, Bernard Charles	*Boston*
Heap, Richard Dunham	*Fall River*
Hynes, Fred Henry	*New Haven, Conn.*
Jakmauh, Paul John	*S. Boston*
Jensen, William Christian	*Worcester*
Jones, Fred Durgin	*Dorchester*
Jones, Guy Walter Stanley	*Waltham*
Kelley, Edward Joseph	*Brockton*
Kenney, John Francis	*New Bedford*
Kenworthy, Marion Edwena	*Middletown, Conn.*
Kewer, Leo Thomas	*Waverley*
King, Drue	*Augusta, Ga.*
Leary, Alfred James	*Newton*
Lemay, Alfred Mederic	*Marlboro*
Levek, Joseph	*Lawrence*
Lyle, Eveline Burton, A.B. (Mt. Holyoke)	*Gloucester*
MacKenzie, James Alexander	*Louisville, N. S.*
MacLeod, Emily Clark	*Boston*
Macomber, Clarence Alden	*Pittsfield, Me.*
MacQueen, James Alen	*Boston*
Madden, John James	*Charlestown*
Marsh, Harold Edward	*Quincy*
McCoart, Richard Felix, Jr.	*Rumford, R. I.*
McGill, Chester Francis	*Marlboro*
McPherson, Sidney Horace	*Roxbury*
Merrill, Everett Albert	*Bridgton, Me.*
Metcalf, Richard	*Winthrop*
Miniter, Francis Gabriel	*Medford*
Moncrieff, William Armitage	*New Bedford*
Moore, Mary Teresa Veronica	*Roxbury*
Mott, George Ernest	*Malden*
Mulvanity, John Joseph	*Nashua, N. H.*
O'Reilly, Francis Augustine	*Lawrence*
Pavlides, Socrates Yakovos	*Boston*
Phaneuf, Louis Eusebe PHARM.D. (Mass. Coll. Ph.)	*Ware*
Rabinovitz, Bernard	*Malden*
Reed, Beatrice Alma	*S. Boston*
Regan, James Joseph	*S. Boston*

Reynolds, Frank Leo Sinclair, M.D.	*Middleboro*
Roderick, Charles Elvin	*Taunton*
Ryder, Walter Irenaeus	*S. Boston*
Sewall, Edgar Floyd	*Greenland, N. H.*
Silva, Savero Pacheco	*New Bedford*
Simmons, Ralph Hayward	*Brockton*
Simonds, Frederick Artemas	*Wakefield*
Thoennes, Matthew Nicholas	*Dorchester*
Tobey, Henry Pratt	*Great Barrington*
Varrell, William Walton	*York Harbor, Me.*
Ventrone, Anthony Caesar Ph.C. (R. I. Coll. Ph.)	*Providence, R. I.*
Wainshel, Perez William	*Lynn*
Wheet, Harry Ray	*N. Cambridge*
Wilson, Charles Henry	*Chelsea*
Wright, Arthur Clarendon	*W. Somerville*
Young, Edward Wallace	*Taunton*

Third Year

Anderson, William Laurence	*New Haven, Conn.*
Atwood, Blanche Louise	*Whitman*
Baxter, Clarence Pennell	*Boston*
Berlin, Maurice George	*Dorchester*
Berman, Myer	*Boston*
Carpenter, Robert John	*Winchester*
Clapp, Roger Irving (D.M.D.)	*Dorchester*
Clow, Henry Leon	*East Wolfeboro, N. H.*
Coen, Michael	*Boston*
Davis, Henry Levi	*Lynn*
Elkin, Samuel Nathaniel	*Dorchester*
Finkelstein, Isadore Albert	*Lynn*
Goldberg, Morris	*Chelsea*
Harney, Robert Edwin	*Boston*
Johnson, Herbert Lester Charles	*Brookline*
Jones, Thomas Paul	*Roxbury*
Klein, George	*Dorchester*
Laliberte, Elie Joseph	*Spencer*
Levine, Harry Benjamin	*Roxbury*
Logiodice, Leonard Francis	*West Haven, Conn.*
MacIntyre, William Angus	*West Roxbury*
MacKay, William Henry	*Waltham*
McIntosh, Jennie Grace	*Winchendon*
Meyers, Hyman Bernhard	*Chelsea*
O'Brien, John Charles, Jr.	*Greenfield*

O'Brien, Thomas Joseph	*Westboro*
Osborn, Stanley Hart	*Peabody*
Paglia, Jeremiah James	*Boston*
Rapoport, Boris	*Dorchester*
Record, Harold Roland	*E. Braintree*
Rodriguez, Enrique	*Barranquilla, Colombia, S.A.*
Rogers, John Andrews	*Nashua, N. H.*
Silverman, Louis Serebriany	*Boston*
Smith, Edwin Eugene	*Waltham*
Starr, Lucy Margaret	*Dorchester*
Sullivan, Elizabeth Ann	*Winchendon*
Wheatley, Frank Edward	*N. Abington*
Woodward, LeRoy Albert Ph.G. (R. I. Coll. Ph.)	*Pawtucket, R. I.*

Second Year

Adams, Winthrop	*Cambridge*
Alley, Leon Arthur	*Brockton*
Allison, Carl Edwin	*Wakefield*
Angier, Harlan Wesley	*Oakham*
Armstrong, Charles Medville	*Calais, Me.*
Bearse, Carl	*Boston*
Birdsall, Clarence Harlow	*Lawrence*
Brown, Roy Farrington	*Provincetown*
Burns, John Edward	*Natick*
Butler, Alice Etta	*Stoneham*
Butler, David Mathew	*Brockton*
Caines, Richard John Ridgway	*Boston*
Cunningham, Richard Augustine	*West Lynn*
Dunn, Joseph Henry	*Rockland*
Dutton, Frank Kingsley	*Westerly, R. I.*
Elkind, Henry Byron	*Worcester*
Flynn, Thomas Stephen	*Woonsocket, R. I.*
Fobes, Howard Edward	*Whitman*
Gallant, Alfred Edward, A.B. (St. Ann's)	*Waltham*
Geary, Francis Henry	*Danvers*
Gooding, John Harold	*Boston*
Granata, Tancredi Grovanni	*Providence, R. I.*
Green, Archibald Forest, D.V.S. (N. Y. Univ.)	*Rockland, Me.*
Green, Harold Russell	*Somerville*
Guralnick, Rubin	*East Boston*
Hadley, Amos William	*Boston*
Hart, Francis Denbroeder	*Bridgewater*
Hart, Louis Park	*Marlboro*

Heywood, Nathaniel Jewett	*Westboro*
Hodgkins, Edward Marshall	*Dorchester*
Jennings, John Greenwood	*Jewett City, Conn.*
Jewett, Everett Porter	*Gardner*
Kane, William Vincent	*Lynn*
Kelleher, Simon Bartholomew	*Cambridge*
Kemp, Lysander Schaffer	*N. Cambridge*
Kempton, Whitman Tupper	*Newton Upper Falls*
Killam, Franklin Harrison	*West Somerville*
Koplin, Harry	*Windsor Locks, Conn.*
LaCoste, Stanley James	*Malden*
Leith, Richard Bliss	*Greenfield*
Levy, Benjamin George	*Medway*
Levy, Maurice Marshall	*Somerville*
Lynch, Joseph Michael	*Dorchester*
MacDonald, Paul Sydney	*Dorchester*
Mahoney, John Francis	*New Bedford*
Mann, David Edwin	*Norfolk*
Margeson, Reginold Dimock	*Westwood*
Margolis, Barney Joseph	*New Bedford*
Martin, William Richard	*Spencer*
McCarthy, Charles Daniel Jr.	*Malden*
McClintock, Elsie	*Chelsea*
McDonald, Harry Leo	*Attleboro*
McKiernan, Robert Lewis	*New Haven, Conn.*
Mernin, Mary Towler	*Cambridge*
Muldoon, Agnes Catharine	*Somerville*
Muldoon, Mary Theresa	*Somerville*
Murphy, Harold Alphonsus	*St. John, N. B.*
Murphy, Joseph William Patrick	*Salem*
Papavasilion, Vasilios Konstantinos	*Natick*
Persky, Myer	*Malden*
Quirk, Richard Charles	*Bristol, R. I.*
Quirk, Thomas Christopher	*Watertown*
Rafferty, Thomas Bernard	*Lynn*
Regan, William Francis	*Chelsea*
Roderick, Anthony Joseph	*New Bedford*
Salerno, Louis Francis	*East Boston*
Sandler, Frank Fishel	*Revere*
Schwartz, George Harvey	*East Boston*
Shinn, Philip Allen	*Boston*
Silverman, Max	*Brockton*
Smith, Percival Lathrop	*Dorchester*
Smith, William Francis	*Malden*

Sullivan, Frank Cornelius	*Lawrence*
Sypher, Edna Newell	*South Braintree*
Terada, Osamu, B.S. (Osaka, Japan)	*Sakai City, Japan*
Tripp, John Henry, A.B. (Lincoln University)	*Boston*
Whitcomb, Clarence Adelbert	*Malden*
Whitney, Leroy Danforth Ph.C. (R. I. Coll. Ph.)	*Boston*
Woodside, John Nelson	*Cambridge*
Wright, Willard Lyman	*Keene, N. H.*

First Year

Anderson, Arthur Forest	*Westerly, R. I.*
Andrews, Benjamin Franklin	*Worcester*
Applebaum, Jacob	*Dorchester*
Aronson, Charles	*Salem*
Barron, Maurice Edward	*Cambridge*
Barry, Thomas Matthew	*Lynn*
Battershall, Jesse Wolfenden	*Attleboro*
Beaudet, Elphege Alcime, B.S. (Laval)	*Newmarket, N. H.*
Bennett, Ernest Floyd	*Ansonia, Conn.*
Berr, Alfred William	*Rockville, Conn.*
Brannick, Catherine Elizabeth	*Somerville*
Buckley, Mary Harrington	*Marlboro*
Cauley, John Henry Jr.	*Dorchester*
Chalfen, Samuel	*Cambridge*
Clark, William Francis	*Peabody*
Cohen, Edis Nathan	*North Adams*
Cohen, Leo	*Providence, R. I.*
Cohen, Samuel Adams	*Roxbury*
Condrick, James Francis	*Weymouth*
Connor, Hillary Joseph	*Woodstock, N. B.*
Cosby, Edwin Gordon	*Derby Line, Vt.*
Cotting, William Frederick	*Medford*
Cregg, Hetbert Alexander	*Lawrence*
Dalton, Stephen, James	*Marlboro*
Dennett, Paul Carroll	*Portsmouth, N. H.*
Di Mento, Vincent James	*Boston*
Dine, Harold Irwin	*Roxbury*
Duff, John Jr.	*Charlestown*
DuVally, Nicholas	*Fall River*
Easter, Edna Francis	*Arlington*
Erlenbach, James Hill	*Dorchester*
Fiege, Herbert Reynold	*Cambridge*
Freeman, Benjamin Lawrence	*Brockton*

Fregeau, Aime Napoleon	*Fall River*
Friederman, Elie Louis	*Boston*
Frost, Morton Fletcher	*Rumford, R. I.*
Gaetain, Arthur Leonard	*Dorchester*
Genge, Victor Patrick	*St. Johnsbury, Vt.*
Ginn, Robert Leicester	*Somerville*
Goldman, Edward	*Boston*
Grant, Winifred Margaret	*Boston*
Greenburg, Minnie Edna	*Douglas, Arizona*
Hale, Frank Smith	*Providence, R. I.*
Hardy, Wilbert Clark	*Haverhill*
Harriman, Frank Edwin	*North Adams*
Hekimian, Yakoub Hagop	*Kilis, Turkey*
Herlihy, David Joseph	*Cambridge*
Hopner, Sadie	*Lowell*
Hurley, William Cyril	*East Boston*
Johnson, Goodwin Adolph	*Keene, N. H.*
Kaitz, Harry	*Boston*
Kandib, Annie Hilda	*Dorchester*
Keenan, James Alphonsus	*Lynn*
Keyes, Frederick Anthony	*Boston*
Laliberte, Edmond Joseph	*Spencer*
LeClair, Hormidas Homer	*Fall River*
Liberti, Angelo	*East Boston*
Lumbard, Ralph Emery	*Fairhaven*
Lynch, Charles Leo	*Roxbury*
Lynch, Francis John	*Holyoke*
MacGray, Charles Leverne	*Melbourne, N. S.*
MacPhee, Lillian Lee	*West Somerville*
McCabe, John Edward	*North Attleboro*
McCormick, William Aloysius	*Medford*
Meehan, James Morgan	*Woburn*
Meledy, Joseph Aloysius	*Providence, R. I.*
Melkonian, Eliza Melkin	*Arabker, Turkey*
Meredith, Bessie Lyndon	*Boston*
Mileau, Alexander, Jr.	*Lewiston, Me.*
Narekian, Nishan Krikor	*Cambridge*
Noonan, Kaen Aloysius, D.M.D.	*Roxbury*
O'Brien, Frederick William	*Arlington*
O'Connor, William Henry	*Dorchester*
Papen, George William	*Roxbury*
Perry, Walter Leslie	*Medford*
Potter, Edgar Sayles	*Chepachet, R. I.*
Powers, Harris Earle	*Manchester, N. H.*

Pratt, Emily Adelaide	*Roxbury*
Quinn, John Joseph James	*Revere*
Raymond, Albert Orville	*Brockton*
Reynolds, James Edward	*Manchester, N. H.*
Rice, George Arnold	*Worcester*
Robins, Samuel Alexander	*Dorchester*
Romeu de, Martha Robert	*Mayaguez, P. R.*
Rosen, Kermit Charles	*Dorchester*
Rudman, Israel Elis	*Bangor, Me.*
Rumrill, Samuel Irving	*Malden*
Scanlon, Joseph Michael	*Lawrence*
Schaefer, Jacob	*New Britain, Conn.*
Scott, David Miller, A.B. (Lincoln University)	*Augusta, Ga.*
Simmons, Hugh Ludwig	*Morrill, Me.*
Skirball, John Jacob	*Beachmont*
Sullivan, Daniel Joseph A.B. (Mt. St. Josephs Coll.)	*Manchester, N. H.*
Sundelöf, Ester Mathilda Eleonora	*Boston*
Sweeney, John Gerard	*Nantasket*
Thomas, Everett Onslow	*St. Stephen, N. B.*
Tierney, Edward James	*Holyoke*
Ullian, Louis Joseph	*Boston*
Wadden, Joseph Mathew	*Cambridge*
Walsh, Patrick Henry	*Fall River*
Wood, William Baxter	*Revere*
Zarrella, Angelo Maric	*East Boston*

Special Student

Carney, Harold Edwards	*Portland, Me.*

Post-Graduate

Cox, Ann Caroline, M.D.	*North Weymouth*

Supplementary List

(Students present during 1911–1912, but not appearing in the catalogue)

Allison, Carl Edwin	*Wakefield*
Terada, Osamu	*Sakai City, Japan*

Post-Graduate Course

Schussler, Otto Frederick, M.D.	*Minneapolis, Minn.*
Trainor, Joseph, M.D.	*Salem*

Dental School

[P. O. Address, 416 Huntington Ave., Boston, Mass.]

Third Year

Allen, Frederick Carroll	*New Bedford*
Bernstein, Barnett	*Lowell*
Brown, Manson Daniel	*Detroit, Me.*
Browne, Louis	*West Lynn*
Bugler, Andrew Philip	*Boston*
Canarie, Martin Charles	*Haverhill*
Cassidy, Gregory Philip	*Houlton, Me.*
Cheney, Joseph Edward	*Leominster*
Clement, Dwight Richardson	*Saco, Me.*
Cohan, Benjamin David	*Roxbury*
Curtis, George William	*Everett*
Dailey, James William	*Cambridge*
Davis, Raymond Merrill	*Lynn*
Dickens, Willard Lee	*Camden, Me.*
Donovan, William Dacey	*Wakefield*
Doyle, Joseph James	*Fall River*
Fogg, Albion Rowell	*Littleton, N. H.*
Foley, George Arthur	*Winchester*
Gale, Charles Romandel	*Dorchester*
Gerrish, George Henry	*Spencer*
Gibbons, William Francis	*Clinton*
Gile, Holland	*Keene, N. H.*
Grady, Anthony Bonaventure	*Clinton*
Hart, Harold Francis	*Dorchester*
Howe, Rufus Joseph	*Spencer*
Hoye, Frederic Joseph	*New Bedford*
Huntoon, Raymond Philip	*Natick*
Jantzen, Joseph William	*Lowell*
Kelliher, Robert James	*Springfield*
King, John Leo	*Newton Highlands*
Lamb, Harold Robbins	*Greenfield*
Lan, Maurice	*Worcester*
Lichtenstein, William Isidore	*Roxbury*
Looney, Michael Francis	*Lawrence*
March, Richard Conrad	*Sandy Creek, Me.*
McDonald, Thomas Anthony	*South Boston*
Moise, Joseph Max	*Holyoke*
Morgner, August Herman	*Clinton*

Morris, Frederick Edward	*Lowell*
Murray, Cornelius Joseph	*Prides Crossing*
Nalchajian, John	*Chelsea*
Nash, Harold Edward	*Westboro*
O'Brien, William Ahern	*Greenfield*
O'Donnell, Roger Joseph	*S. Boston*
Parker, Ralph Joseph	*W. Swanzey, N. H.*
Porter, Harry Wallace	*Dorchester*
Redden, Joseph Eugene	*Springfield*
Rounds, Samuel Dean	*Reading*
Shaw, Arthur John	*Victoria, N. B.*
Silver, John Leo	*Lynn*
Simm, Fred Emil	*Waverley*
Slein, Owen Patrick	*Wheelwright*
Spratt, Robert Alexander	*Boston*
Springer, Simon Harry	*Somerville*
Staincliffe, John Joseph	*Fall River*
Stearns, Hyman	*Boston*
Stolworthy, Ralph	*Providence, R. I.*
Sullivan, Joseph Francis	*Dorchester*
Tracy, Norman Hutchinson	*Jewett City, Conn.*
Traynor, William Bernard	*Biddeford, Me.*
Veale, Thomas Herbert	*Quincy*
Walker, Forrest Stanley	*Saco, Me.*
Walsh, Henry Patrick	*Whitinsville*
Willey, Leon Bartlett	*Middletown, Conn.*
Willis, Frank Adelbert	*South Boston*

Second Year

Ahern, John Joseph, Jr.	*Cambridge*
Bachelder, Eugene Earle	*Gardiner, Me.*
Beckman, Roger Parker	*Gloucester*
Bergan, William Michael	*Hingham*
Bonnell, Percival Lincoln	*St. John, N. B.*
Brass, Arthur Jake	*Roxbury*
Briggs, Carl Skillings	*S. Paris, Me.*
Brown, Mark Mendell	*Roxbury*
Burke, Samuel Joseph	*Providence, R. I.*
Carroll, John Leo	*Canton*
Clifton, Joseph Howarth	*Fall River*
Cogan, Alfred Valentine	*South Boston*
Collins, Arthur Eugene	*Melrose*
Corry, Robert Joseph	*Woburn*
Courtney, Charles Stephen	*Manchaug*

Cunningham, James Edward, Jr.	*Worcester*
Curtin, Timothy James	*Norwood*
Danforth, Harold Eugene	*Madison, Me.*
Desmond, Joseph Michael	*Cambridge*
Everson, Leon Walter	*Hanson*
Fisher, Ernest Morton	*Somerville*
Fitzpatrick, Edward Ambrose	*Medford*
Fleming, Lewis James	*Fairville, N. B.*
Fowler, Milburn Matthew	*Skowhegan, Me.*
Gallagher, James Bernard	*Rockland*
Gibbons, Martin Francis	*Clinton*
Ginns, Max	*Worcester*
Gould, Clifton Spurling	*Dorchester*
Grady, Clarence Leander	*Clinton*
Griffin, Ralph Henry	*Medford*
Gussman, Hayward William	*Londonderry, N. H.*
Harding, Harry Osborne	*Stoneham*
Herlihy, John Edward	*Fitchburg*
Johnson, Edward Albert, Jr.	*Lawrence*
Kelly, Joseph Anthony	*Boston*
Kelley, Joseph Michael	*Watertown*
Kingsley, Victor Joseph	*Kingston, Ontario*
Knox, Henry Rollins	*Chelsea*
Lane, Clark Walter	*Biddeford, Me.*
Laurie, John Warren	*Somerville*
Lavien, Leo Himan	*Worcester*
Lewis, Minott White	*W. Somerville,*
Lockwood, Arthur Dodge	*Merrimac*
Lombard, John Blase	*Charlestown*
Luce, Carlton Lee	*N. New Portland, Me.*
Luck, Emily Mary	*Cambridge*
Maker, Samuel	*Fall River*
Manning, Joseph Aloysius, A.B. (Boston Col.)	*Roxbury*
Marshall, Lloyd Francis	*Newtonville*
Mayo, Harold William	*Winthrop*
McGann, Philip Sheridan	*Somerville*
McGrath, James Francis	*Brookline*
McKinnon, Frederic William Thomas	*Dorchester*
McPherson, William Alexander	*Clarktown, P. E. I*
Metters, Ralph Henry	*Attleboro Falls*
Miller, Ralph Henry	*Dorchester*
Mitchell, Marks	*Brockton*
Moulton, Carroll Parsons	*Ossipee, N. H.*
Murphy, William Lawrence	*Dover, N. H.*

O'Connor, Harry Newman	*Revere*
O'Neil, William Thomas, Jr.	*Amesbury*
Payton, Charles Henry	*Brockton*
Pearlin, Harry	*Malden*
Peterson, Edwin William	*Rockport*
Pierce, Helen Chic	*New Bedford*
Plummer, Gordon Leslie	*Cambridge*
Ray, Harry Eugene	*Greenville, Me.*
Regnier, Joseph Augustine	*Pittsfield*
Rice, Mark John	*Somerville*
Rich, Robert Raymond	*Maynard*
Riley, William Aloysius	*Lawrence*
Rooney, James Henry	*Lowell*
Ross, David Hecter	*Boston*
Rowlandson, Janet Mary	*Lowell*
Sanderson, Melville Alexander	*Waltham*
Savage, Peter Joseph	*Whitinsville*
Scher, Emmanuel	*Roxbury*
Sibley, Henry Robert	*Bradford*
Small, Roydon Larrabee	*Biddeford, Me.*
Stahl, Herrmann Hanson	*Chelsea*
Staples, Lawrence Milton	*Newington, N. H.*
Sullivan, Jeremiah Joseph	*Milford*
Sullivan, Joseph Edward	*Melrose*
Sullivan, Joseph William	*Cranston, R. I.*
Tartre, Joseph Armand	*Biddeford, Me.*
Webb, Edmund Martin	*Attleboro*
Weene, Frederic Isidor	*East Somerville*
Williams, Floyd Elbert	*Manchester, N. H.*
Yale, Henry Isadore	*Salem*

First Year

Aloojian, George	*Lynn*
Arnold, Leo Gregory	*Providence, R. I.*
Barton, Earle Stanley	*Houlton Me.*
Berg, Bernard	*Dorchester*
Berry, Charles William	*South Portland, Me.*
Brown, Chester Kilburn	*Roslindale*
Brown, Harold Walter	*Lynn*
Caisse, Richard Philemon	*North Leominster*
Calabro, John	*Boston*
Caldwell, Warren Charles	*Dorchester*
Clancy, Frederic David	*Holliston*
Cohan, Bernard Israel	*Fitchburg*

Cohen. Joseph Harry	*Haverhill*
Colony, Loris	*Brookline*
Cousins, Lee Roy	*W. Somerville*
Covell, Percival Wentworth	*Brockton*
Crockett, Earl Gustavus	*Milford*
Dervin, Albert Henry	*Clinton*
Duffy, Philip Arthur	*Riverpoint, R. I.*
Dumont, Roland Sijefroy	*Lewiston, Me.*
Eagan, John Patrick	*West Newton*
Easton, Arthur Witham	*Bridgton, Me.*
Epstein, Nathaniel	*Woonsocket, R. I.*
Ewing, Arthur Wellington	*South Framingham*
Farrell, John Benedict	*Revere*
Farren, Bernard Neil	*Turners Falls*
Ferreira, Theophylo	*Providence, R. I.*
Ferrin, Joseph Leo	*Lawrence*
Feuerhan, Frank August	*Portsmouth, N. H.*
Fine, Victor	*Boston*
Finnegan, Frederick Leo	*Saranac Lake, N. Y.*
Foley, William Fergus	*Holyoke*
Forsyth, Truman Oscar	*Brighton*
Foss, Roy Tibbetts	*Exeter, N. H.*
Francis, Lewis Abbott	*Malden*
Freundlich, Harry	*Boston*
Gabeler, Charles Pierce	*Lawrence*
Gallagher, Justin Peter	*Moncton, N. B.*
Gaw, Albert James	*Cambridge*
Gaw, George Joseph	*Auburndale*
Gerson, Samuel	*Chelsea*
Ginn, David Clifton	*West Somerville*
Godfrey, Cranston Franklin Jr.	*Hingham*
Goldberg, George	*Boston*
Gould, Samuel Carl	*Dorchester*
Greany, Timothy Joseph	*Fall River*
Greene, Thomas Francis	*Lawrence*
Gregory, Harold Lintner	*Pittsfield*
Harris, Frank Edward	*Stoneham*
Hatch, Charles Elliot	*Islesboro, Me.*
Heffern, William Joseph Jr.	*Worcester*
Himmer, Richard Frank	*Lawrence*
Hogan, Myles Thomas	*Cambridge*
Horton, William Victor	*East Boston*
Huey, Thomas Harold	*Everett*
Hughes, Frederick Gerald	*North Craftsbury, Vt.*

Jacobs, Leon Harry	*Rochester, N. H.*
Johnson, Guy Lloyd	*Littleton, N. H.*
Johnson, Robert Kidder	*Lynn*
Kelley, Clarence Lauton	*Jonesport, Pa.*
Kennedy, James Bede	*Springfield*
Kilbride, Patrick Lawrence	*Malden*
Lanergan, Harry Clement	*Roxbury*
Langlois, Elie David	*Adams*
LeBœuf, Victor Anthony	*Worcester*
Levitt, Henry Salick	*Roxbury*
Lovejoy, Frederick Collins (A.B. Bates College)	*North Chesterville, Me.*
Lydakis, Luke Peter	*Crete, Greece*
Maher, William Henry	*Brockton*
Mahoney, John Joseph	*Dorchester*
Maloney, Charles Leo	*Newton*
Mannix, Robert Milan	*Worcester*
Mansfield, Frederick Allen	*Rockland*
Markarian, Asadoor	*Worcester*
Mauss, Charles Wendell	*Hingham*
Mayo, Newell Cephas	*Athol*
McCoart, Charles Carroll	*Rumford, R. I.*
McDonnell, Thomas Charles	*Pittsfield*
McGowan, Fred Dennis	*Dover, N. H.*
Meltzer, Philip Edward	*Roxbury*
McGrath, Martin Henry	*Natick*
Meagher, Matthew Aloysius	*Bennington, Vt.*
Mercille, Joseph McKenzie	*Haverhill*
Miner, Arthur Westall	*Malden*
Moore, Hugh Louis	*Swampscott*
Morris, Isidore Philip	*Haverhill*
Neagle, Martin Walter	*West Newton*
O'Brien, Charles Albert	*Worcester*
O'Day, Francis Daniel	*Hydeville, Vt.*
O'Donnell, Richard Joseph	*Lynn*
O'Donnell, William Thomas	*East Boston*
O'Neil, Gerald Bernard	*Chicopee Falls*
Paradis, Etienne	*Manchester, N. H.*
Perman, John Gabriel	*Worcester*
Pollina, Vincent Josephine	*Brookline*
Porell, William Isaiah	*Haverhill*
Robertson, Walter Colburn	*Lakewood, R. I.*
Ronan, Catherine Frances	*Peabody*
Ryan, Frank Harold	*Oakdale*
Scott, Colburn Henry	*Cochituate*

Shohet, David Moses	*East Boston*
Souza de, Francisco Lopez	*San Antonio, Cape Verde Islands*
St. Andre, Arthur Oliver	*Boston*
Staples, Edward John	*Cape Elizabeth, Me.*
Stolovsky, Samuel	*Lebanon, N. H.*
Strong, William Henry	*East Boston*
Sullivan, Louis Edmund	*Maynard*
Sweeney, Edward John	*Fall River*
Tobin, William James	*Bristol, R. I.*
Todd, Joseph Donald	*Dorchester*
Urban, Amalie Magdalena	*Leominster*
Wall, William Tracy	*Weymouth*
Whalen, William Patrick	*Adams*
Whichelow, George William	*Roxbury*
Williams, Arthur Clyde	*North Anson, Me.*
Wilson, John Chester	*Beverly*
Zorian, Haroid Melkon	*Lynn*

Special Students

Beazley, Ernest Valentine	*Providence, R. I.*
Danforth, George Arthur	*Manchester, N. H*
Griffin, William Henry, Jr.	*South Boston*
Hurley, William Patrick	*South Boston*
Levenson, Myron	*Dorchester*
Merrill, Ernest Samuel	*Wollaston*
Morin, Joseph Emile	*Lawrence*
Ryan, Edmund Clement	*Pawtucket, R. I.*

Supplementary List

(Students present during 1911–1912, but not appearing in the catalogue)

Special

Chessman, John Wesley	*Abington*

Post-Graduate

Arruda, José d'	*St. Michael's, Azores, Ids.*

SUMMARY

Trustees		29

CORPS OF INSTRUCTION

Emeritus	4	
President and Professors	51	
Associate Professors	4	
Assistant Professors	18	
Lecturers	7	
Instructors	86	
Demonstrators	2	
Assistant Demonstrators	8	
Assistants	43	
Total engaged in work of instruction	—	223
Other Officers, not previously counted		41

STUDENTS

GRADUATE SCHOOL		7
SCHOOL OF LIBERAL ARTS:		
Senior	14	
Junior	24	
Sophomore	33	
Freshman	70	
Special	8	
Unclassified	5—	154
ENGINEERING SCHOOL:		
Senior	37	
Junior	45	
Sophomore	52	
Freshman	56	
Special	1	
Unclassified	6—	197
CRANE THEOLOGICAL SCHOOL		7
JACKSON COLLEGE:		
Senior	16	
Junior	16	
Sophomore	19	
Freshmen	36	
Special	1	
Unclassified	5—	93
MEDICAL SCHOOL:		
Fourth Year	95	
Third Year	38	
Second Year	80	
First Year	102	
Special	1	
Post-Graduate	1—	317
DENTAL SCHOOL:		
Third Year	65	
Second Year	89	
First Year	117	
Special	8—	279
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Total registration of students		1062
Names appearing twice		5
Total number of students		1057

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Annual Report of the Treasurer
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Announcement of the Engineering School
Announcement of the School of Liberal Arts
Announcement of Jackson College
Register of Officers and Graduates

Vol. XIV

TUFTS COLLEGE BULLETIN

No. 2

DECEMBER, 1913

ANNUAL CATALOGUE

1913-1914

PUBLISHED BY THE TRUSTEES OF TUFTS COLLEGE

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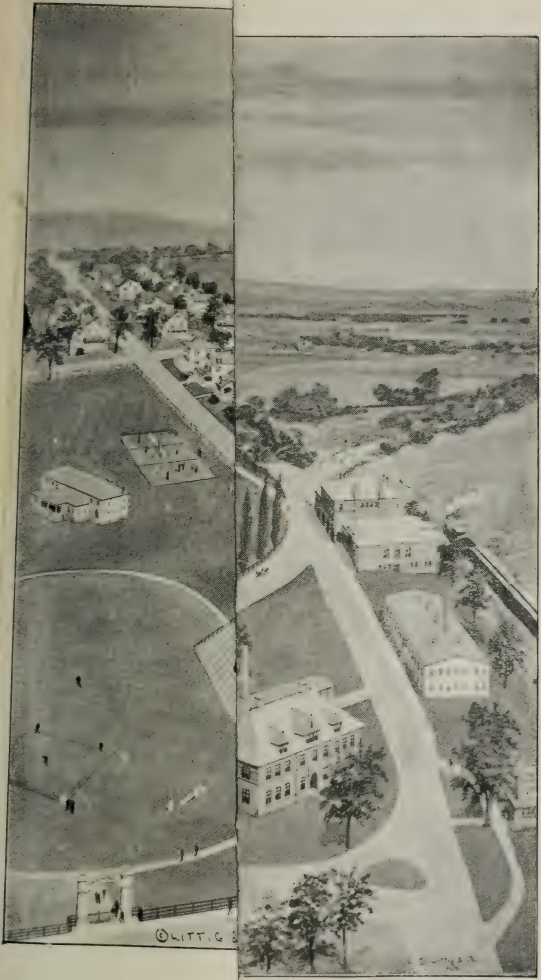

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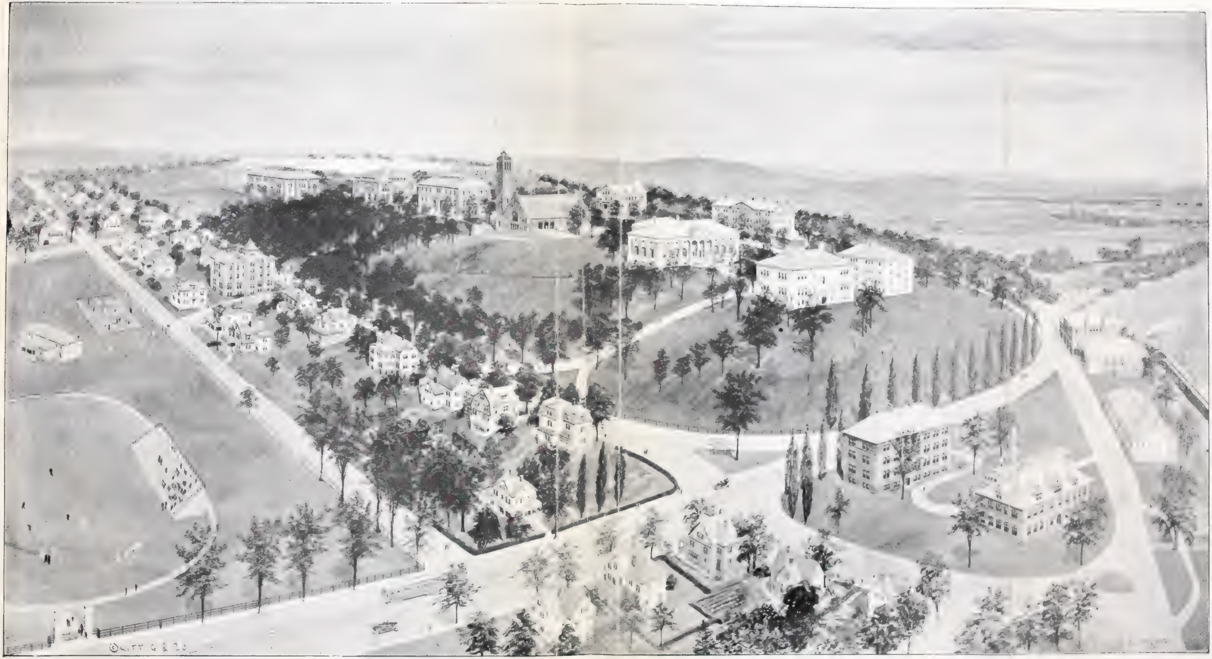

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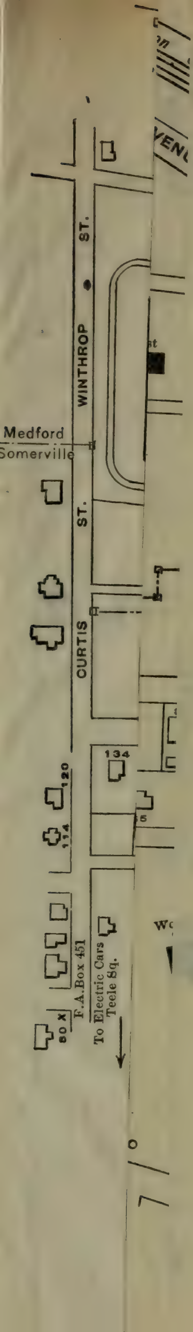
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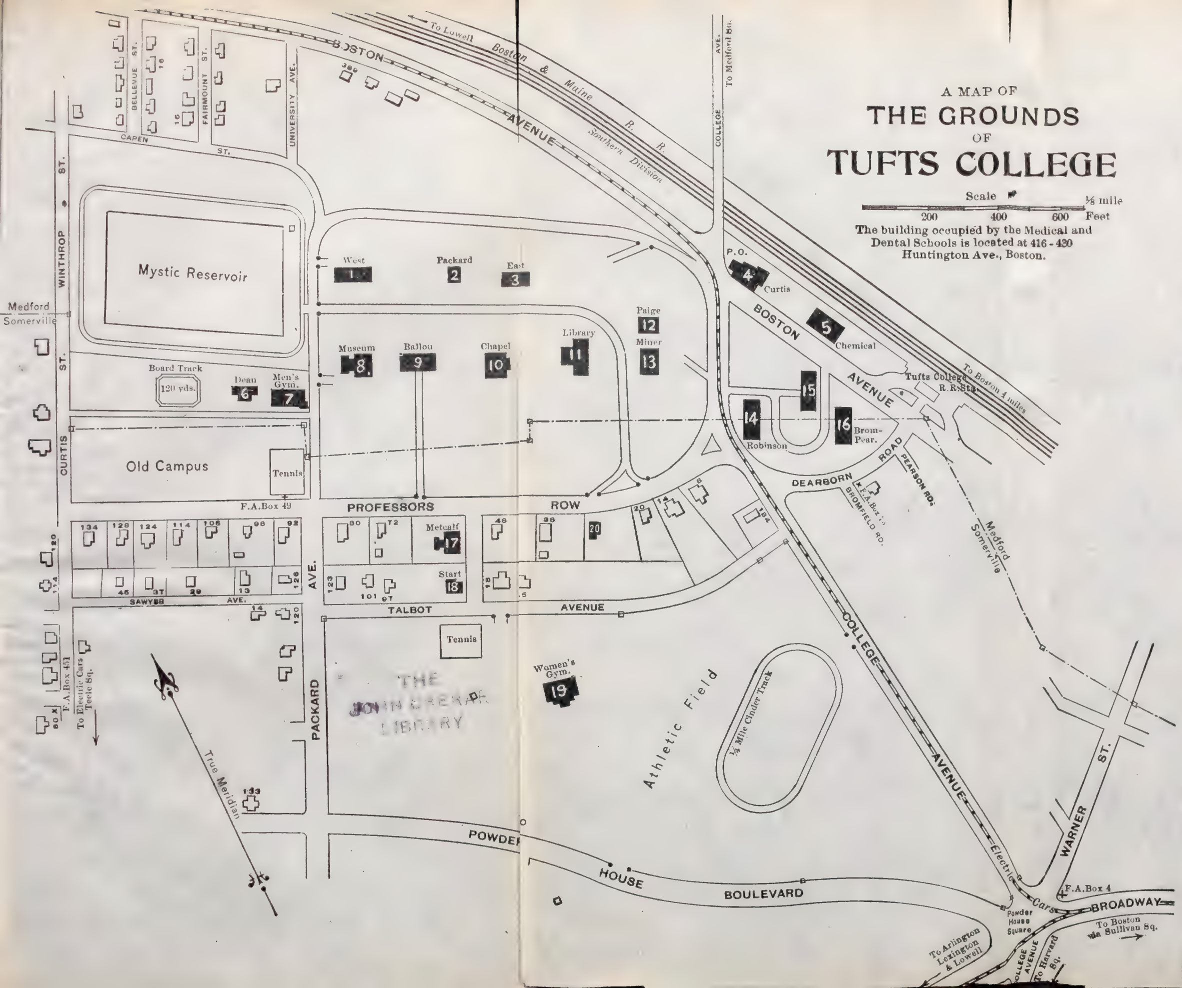

A MAP OF

THE GROUNDS OF TUFTS COLLEGE

The building occupied by the Medical and Dental Schools is located at 416 - 430 Huntington Ave., Boston.

THE JOHN CRERAR LIBRARY

College Buildings

1 West Hall (dormitory)
2 Packard Hall (Theological class rooms)
3 East Hall (dormitory)
4 Curtis Hall (post office, class rooms, and dormitory)
5 Chemical Laboratory
6 Dean Hall (dormitory)
7 Goddard Gymnasium (for men)
8 Barnum Museum (public museum, biological laboratory, and class rooms)
9 Ballou Hall (main offices and class rooms)
10 Goddard Chapel
11 Eaton Memorial Library
12 Paige Hall (Theological School dormitory)
13 Miner Hall (Jackson College class rooms)
14 Robinson Hall (Engineering laboratories and class rooms)
15 Power Station
16 Bromfield-Pearson Building (Engineering shops and class rooms)
17 Metcalf Hall (dormitory for women)
18 Start House (dormitory for women)
19 Jackson Gymnasium (for women)
20 Richardson House (dormitory for women)

Residences

Professors Row
8 Residence of the President
14 Dean Anthony
20 Prof. Lewis
38 " Durkee
48 Dean McCollester
72 Dean Davies
80 Zeta Psi House
92 Prof. Fay
98 " Bray
106 " Tousey
124 Acting President Hooper
128 Prof. Schmidt
134 Alpha Tau Omega House

Sawyer Avenue
13 Delta Upsilon House
14 Prof. Wade
29 Prof. Ransom
37 The Commons Club
45 Prof. Earle, Prof. Seavey

Talbot Avenue
65 Dean Wren
101 Prof. Munro, Prof. Rollins

Powder House Boulevard
133 Prof. Rockwell

Curtis Street
66 Prof. Gilmer
114 Prof. Harmon
120 Prof. Lambert

Packard Avenue
120 Prof. Leonard
123 Theta Delta Chi House
126 Prof. Denison

Latin Way
18 Delta Tau Delta House

College Avenue
184 Prof. Bolles

Pearson Road
60 Mr. Knight

Boston Avenue
361 Mr. Henson

Bellevue Street
16 Sigma Tau Alpha House
21 Prof. Conner

Fairmount Street
22 Mr. Burden

Residences of persons not connected with the College are not indicated.

Post-office address: Tufts College, Mass. Railroad Station: Tufts College, on Southern Division of Boston and Maine Railroad. Electric cars from Boston *via* Sullivan Square. Freight Station: North Somerville, Mass.

Tufts College Catalogue

CATALOGUE

OF

TUFTS COLLEGE

1913-1914

School of Liberal Arts
Engineering School
Graduate School
Medical School
Dental School
Crane Theological School
and
JACKSON COLLEGE FOR WOMEN

Calendar — 1914

JANUARY

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Tufts College, about four miles from Boston, is accessible by rail and by electric cars. The railway station, "Tufts College," is on the Southern Division of the Boston and Maine Railroad; but goods sent by freight go to North Somerville, Mass., and should be so addressed. The post-office address is "Tufts College, Mass."

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Calendar

1913

DEC. 20.	Christmas recess begins in all departments, Saturday, 1 P.M.

1914

JAN. 1.	Christmas recess ends in the Medical and Dental Schools, 9 A.M.
JAN. 4.	Christmas recess ends, Department of Arts and Sciences, Sunday evening.
JAN. 30, 31, FEB. 2, 3, 4.	Mid-year examinations in the Department of Arts and Sciences.
FEB. 4.	End of the first half-year in the Department of Arts and Sciences, Wednesday.
FEB. 9.	Second half-year in the Department of Arts and Sciences begins, Monday. Registration.
FEB. 22.	Washington's Birthday, Sunday. College exercises are suspended on Monday.
APR 5–12	Spring recess in the Medical and Dental Schools
APR. 15.	Spring recess begins in the Department of Arts and Sciences, Wednesday evening.
APR. 22.	Spring recess ends, Wednesday evening.
MAY 8.	Goddard Prize Reading, Friday, 8 P.M.
MAY 27–29.	Senior examinations in Engineering School.
MAY 30.	Memorial Day, Saturday. College exercises are suspended.
JUNE 1.	Senior Theses in Engineering School must be filed at the office of the Dean before 5 P.M.
JUNE 6, 8, 9, 10, 11.	Final examinations in the Department of Arts and Sciences.
JUNE 12.	Class Day, Friday.
JUNE 14.	Baccalaureate Sermon, Sunday, 4 P.M.
JUNE 17.	Annual Commencement, Wednesday.
JUNE 15–20.	Entrance examinations conducted by the College Entrance Examination Board. Application blanks may be obtained from the Secretary of the Board, P. O. Sub-Station 84, New York, N. Y.

Summer Vacation, Thirteen Weeks.

Fall Examinations for Admission to the Department of Arts and Sciences, the Medical School, and the Dental School

SEPT. 12.	Elementary, Intermediate, and Advanced French, 9 to 11 A.M.; Elementary, Intermediate, and Advanced German, 11 A.M. to 1 P.M.; Elementary and Advanced Greek, Advanced Algebra and Trigonometry, 2 to 5 P.M.

SEPT. 14. Algebra, 9 to 10.30 A.M.; English, 10.30 A.M. to 12.30 P.M.; Plane Geometry, 2 to 4 P.M.; Physics, 4 to 5 P.M.; Drawing, 4 to 6 P.M.

SEPT. 15. Elementary, Intermediate, and Advanced Latin, 9 to 12 A.M.; Solid Geometry, 9 to 11 A.M.; Botany, Zoology, Geology and Economics, 11 A.M., to 1 P.M.; History, 2 to 4 P.M., Chemistry, 4 to 5 P.M.

SEPT. 7. Fall examinations for the removal of conditions, in the Medical and Dental Schools begin, 10 A.M.

SEPT. 17. College year begins, Thursday morning. Registration.

SEPT. 30. Lectures begin in Medical and Dental Schools, Wednesday, 3 P.M.

OCT. 10. Registration closes in Medical and Dental Schools, 6 P.M.

OCT. 12. Columbus Day, College exercises are suspended.

OCT 18. Russell Lecture, Sunday, 4 P.M.

NOV. 18. Announcement of Academic Honors, 12 M., Wednesday.

NOV. 26. Thanksgiving Day, College exercises are suspended.

NOV. 29. Thanksgiving recess ends in Medical and Dental Schools, Sunday evening.

DEC. 19. Christmas recess begins in all departments, Saturday, 1 P.M.

DEC. 31. Christmas recess ends in the Medical and Dental Schools, 9 A.M.

1915

JAN. 3. Christmas recess ends in the Department of Arts and Sciences, Sunday evening.

JAN. 29, 30, FEB. 1, 2, 3. Mid-year examinations.

FEB. 3. End of the first half-year in the Departments of Arts and Sciences, Wednesday.

FEB. 8. Second half-year begins, in the Department of Arts and Sciences, Monday. Registration.

Historical Sketch

Tufts College was established under a charter granted on the twenty-first day of April, 1852, by the General Court of Massachusetts. Under this charter, as later amended, the College is empowered "to confer such degrees as are usually conferred by colleges in New England." Its organization now comprises the School of Liberal Arts, the Engineering School, the Graduate School, the Crane Theological School, the Medical School, the Dental School, and Jackson College for Women. The School of Liberal Arts prepares for the degrees of Bachelor of Arts and Bachelor of Science. Work in the Engineering School leads to the degree of Bachelor of Science in Engineering. The Graduate School offers the degrees of Master of Arts and Master of Science. The course in the Theological School leads to the degree of Bachelor of Sacred Theology, that in the Medical School to the degree of Doctor of Medicine, and that in the Dental School to the degree of Doctor of Dental Medicine.

The Foundation.—The movement resulting in the founding of the College was set on foot in 1847, through the efforts of the Rev. Thomas J. Sawyer, of New York, the Rev. Hosea Ballou, 2d, of Medford, and the Rev. Thomas Whittemore, of Cambridgeport. After much consideration, the work of raising a fund of one hundred thousand dollars for a foundation was undertaken, under the direction of the Rev. Otis A. Skinner, of Boston. About sixty thousand dollars was obtained in money. Sylvanus Packard gave his bond for twenty thousand dollars additional, and Charles Tufts gave twenty acres of land on Walnut Hill, embracing the present site of the College. Mr. Tufts announced his intention of increasing his gift of land to more than one hundred acres, and thus became the largest benefactor of the young institution, which accordingly received his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care, and bequeathed to it his entire fortune. Among other benefactors who may be numbered among the founders of the College were Oliver Dean, who gave it ninety thousand dollars, and Thomas A. Goddard, whose gifts, though unobtrusive, were constant. Mrs. Goddard continued the generosity of her husband, and at her death made a substantial bequest to the College. Dr. William J. Walker also made gifts and bequests amounting to nearly three hundred thousand dollars.

While the College owed its beginning to the effort and the support of members of the Universalist denomination, it was provided by the Legislature in the charter that

> "No instructor in said college shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said college, on account of the religious opinions he may entertain."

This provision has always been interpreted by the Trustees and Faculty in its broadest sense. The non-sectarian character of the work of the College is amply shown by the membership of its Faculty and student body. The truth, and not the maintenance of any religious or political doctrine, has been the aim of its research and its instruction.

The Department of Arts and Sciences.— The first Faculty meeting was held October 9, 1854, when there were in College students forming the Sophomore and the Freshman classes. The only building at that time was the main College Building, now known as Ballou Hall. The next building to be erected was a small brick dormitory, now Packard Hall. The large dormitory known as East Hall was the next addition to the group, and in 1872 West Hall was opened to students. It was ten years before building operations were renewed by the College. The original Faculty numbered five. The first class, of three members, was graduated in 1857.

At the outset, provision was made for a course of study leading to the degree of Bachelor of Arts. The only feature of its work peculiar to Tufts College in these years of its beginning was the attention given to the study of history. The first President of the College, the Rev. Hosea Ballou, 2d, D.D., was likewise Professor of History and of Intellectual Philosophy, and gave instruction in history remarkable alike for its quantity and quality, at a time when the study was hardly recognized in American colleges.

Dr. Ballou was succeeded in the presidency by the Rev. Alonzo Ames Miner, D.D., LL.D., who was inaugurated in 1862, and continued in office until 1875, resigning in February of that year. Dr. Miner's incumbency was marked by large financial additions to the College, and by the further growth of a broad and scholarly spirit.

In March, 1875, the Rev. Elmer Hewitt Capen, D.D., was elected to the presidency of the College, vacated by the resignation of President Miner, and he was inaugurated on the second day of June. Dr. Capen's administration, which was characterized by the expansion of the College to university proportions, and was marked by the material and intellectual advance of all departments, was terminated by his death, March 22, 1905.

Rev. Frederick William Hamilton, D.D., LL.D., was appointed Acting President in 1905, was inaugurated as President, June 19, 1906, and resigned in 1912.

Since July, 1912, Prof. William Leslie Hooper, AM., Ph.D., has been Acting President.

The Engineering courses were begun in 1869 with a department of Civil Engineering. The great development of electrical science was promptly recognized, and a department of Electrical Engineering was opened to students in 1882, a professorship in the subject being established in 1890. This side of the college work had rapid development: in 1894 the field, was broadened by the addition of a course in Mechanical Engineering, and in 1898 by one in Chemical Engineering. In these courses effort has always been made to give thorough practical training. The will of the late Henry B. Pearson, founding the Bromfield-Pearson School, and putting it into the hands of the Trustees of Tufts College to administer, provided a thoroughly-equipped building for technical instruction, of great value in drawing, pattern-making, and in machine and forge work. The Bromfield-Pearson building was completed in the fall of 1894. Robinson Hall, completed in 1900, gives to the technical courses a modern building with every facility for their work. It was given in memory of the late Charles Robinson, LL.D., sometime President of the Trustees, by his heirs.

In 1881 the late Phineas T. Barnum gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The main Museum building was completed in 1884. The west wing, containing the new biological laboratories, was erected in 1894. The years 1882 and 1883 saw the completion of Goddard Chapel, given by Mrs. Mary T. Goddard as a memorial of her husband, the first treasurer of the College. Goddard Gymnasium, a gift from the same source, was also completed in 1883. The gymnasium has been enlarged and transformed into what is practically a new building. Dean Hall was erected in 1887 from funds bequeathed by the late Oliver Dean. In the college year 1894–95 two new buildings were opened, in addition to the west wing of the Barnum Museum. These were the Chemical building and Curtis Hall, containing students' rooms, class rooms, and the postoffice.

The gift of one hundred thousand dollars from Mrs. Andrew Carnegie secured the erection of an adequate library building, called the Eaton Memorial Library, which was begun in 1905, and put into active service in 1908.

The development of the College in its internal life has been the notable fact of recent years. In 1866 the degree of Bachelor of Philosophy was offered to students who should pursue a prescribed course of two years, the object being to provide for those who had been prepared only in English subjects. This course was maintained until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted. The degree of Bachelor of Philosophy has more and more fallen into disuse, in favor of Bachelor of Arts. In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered, with an entrance requirement believed to be fully the equivalent of the Greek, in two modern languages. This was one important step taken by the College toward the broadening of its opportunities, but it soon proved to be insufficient. In the fall of 1893 it seemed possible to take another step and to put into operation the present plan of work, which is believed to be an approach to a rational co-ordination and connection of the college and university systems. The principle which governed this adjustment of the College curriculum has been applied to the entrance requirements. There has been a steady growth for many years in the amount of work done, and in the number of departments of learning represented. Two new departments had been instituted in 1892, in response to the tendencies of educational development,—those of Biology and History. Departments of Music and Philosophy have since been added, the work in Political Science has been broadened, and provision made for the study of Public Law.

There were opened in 1895 courses of four years each in Biology, Chemistry, General Science, and Medical Preparatory work, leading to the degree of Bachelor of Science, and accessible to graduates of all good high schools. The course in Biology was withdrawn in 1905. Bachelors of Science may, if they desire, go on to the attainment of the degree of Bachelor of Arts.

In response to a pressing demand the College was, in the summer of 1892, opened to women on the same terms as to men. After seventeen years of trial, it appeared to both Trustees and Faculty that the interests of the sexes could be better served by separate instruction. The necessary amendments to the Charter were procured and, in the fall of 1910, Jackson College for Women was opened as an affiliated institution. Jackson College is under the direction of the Trustees and President of Tufts College. It has a Dean who is a woman. Otherwise its Faculty is identical with that of Tufts. This arrangement assures to the students in Jackson every educational facility offered by Tufts under conditions more favorable than were formerly possible. In the fall of 1894 there was provided for the accommodation of women students, Metcalf Hall, the gift of Albert Metcalf, of Newton. Start House and Richardson House also offer home-like rooms for women students.

The Professional Schools.—The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. Thomas J. Sawyer, D.D., was elected Packard Professor in 1869. This was the beginning of the Theological School. In 1882 the school had developed so that its Faculty received a definite organization From the erection of West Hall until the completion of the separate buildings of the School, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of ex-President Miner, the School was provided with Miner Hall, containing the library, class rooms, chapel, and reception room; and at the same time, largely through the efforts of the Dean, the money was obtained to build Paige Hall, a dormitory for students of the Theological School.

In 1903 a five-year course was offered to students of divinity, combining subjects required for a proper professional equipment with studies that look toward liberal culture. This course is now arranged to cover six years. At its successful completion the degrees A.B. and B.D. are both awarded. There is also a four-year course, leading to B. D.

In 1906 the name of the Divinity School was changed to the Crane Theological School, in recognition of a gift of one hundred thousand dollars from the estate of the late Thomas Crane of New York, whose son, Albert Crane, '63, thus carried out the expressed purpose of his father.

In 1893 Tufts College met what seemed to be a need of the community by opening the Tufts Medical School. The growth of the school in efficiency and numbers justified its institution. The course is four years in length. Women are admitted upon the same terms as men.

The Medical School found its complement in the Tufts Dental School, organized in 1899 by the absorption of the Boston Dental College, which was incorporated in 1868, and has a numerous body of alumni. The equipment, funds, and good will of this school passed to Tufts College.

Administration.—The control of the College is vested by the charter in a self-perpetuating body of Trustees, not to exceed thirty in number. As the College has matured the number of its alumni upon the Board of Trustees has steadily increased. To give the Alumni as a whole a direct represenation in the administration, a Board of Overseers was instituted, which continued from 1899 till 1907. At this time an amendment to the college charter was passed by the Massachusetts legislature, permitting the election of a certain proportion of Trustees from and by the alumni themselves.

THE COLLEGE CHARTER

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said Trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-President, Secretary and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any Trustee from the same corporation, when in their judgment he shall be rendered incapable, by age or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SEC. 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the Trustees to convene at such meetings, and also, from time to time, to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the Constitution and Laws of this Commonwealth, with reasonable penalties, for the good government of the said College, and for the regulation of their own body; and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one-third, at least, of the Trustees are present.

SEC. 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed; and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal, provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.*

SEC. 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College in such manner as shall most effectually promote virtue and piety, and learning in such of the languages, and of the liberal and useful arts and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SEC. 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges honors, or degrees of said College on account of the religious opinions he may entertain.

SEC. 6. The Legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

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* The limitation as to income has been removed by statute.

SEC. 7. The granting of this Charter shall never be considered as any pledge on the part of the Government that pecuniary aid shall hereafter be granted to the College.

CHAPTER 632 OF THE ACTS OF 1910

AN ACT

TO AUTHORIZE THE TRUSTEES OF TUFTS COLLEGE TO MAINTAIN A SEPARATE COLLEGE FOR WOMEN

BE it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. The corporation known as the "Trustees of Tufts College" may establish and maintain for the education of women exclusively a college to be known as the "Jackson College for Women," and may appropriate and set apart for the maintenance thereof any funds now held by it designated by the donors to be for the education of women, and all property, real and personal, hereafter received by gift, grant, devise or bequest for that purpose.

SECTION 2. All the provisions contained in the act establishing the Trustees of Tufts College, and in the acts in amendment thereof, shall relate to the Jackson College for Women, so far as applicable thereto, except as provided in this act.

SECTION 3. The corporation may, in the name of Jackson College for Women, confer any of the degrees which it by law is authorized to confer: provided, however, that degrees so conferred in course shall be conferred exclusively upon women. It may also adopt and use upon diplomas and other written instruments issued in the Jackson College for Women, a seal of a design differing from the common seal of the corporation.

SECTION 4. Section two of chapter two hundred and fifty-five of the acts of the year nineteen hundred and seven is hereby amended so as to read: Section 2. All persons who for five years have held a degree from Tufts College or from Jackson College for Women, conferred in regular course, and all persons who have received from said colleges an honorary degree, shall be entitled to vote for said ten members. And any person who for ten years has held from said colleges a degree conferred in regular course shall be eligible to be elected a member of said corporation: provided, always, that at least seven of the ten members so elected by the Alumni shall hold from Tufts College the first degree in arts or sciences.

SECTION 5. This act shall take effect upon its passage.

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* Numbers following the names indicate date of expiration of term of Trustees elected by the Alumni.

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* The members of the Faculty, with the exception of the President, are arranged in the order of the time at which their first academic degrees were taken, or the time of their studies, where an academic degree was not taken in course. A separate list of Lecturers and Assistants is provided.

† Boston.

‡ The post office address is Tufts College, Mass., unless otherwise indicated.

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Russell Lecturer, 1914

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DEPARTMENT OF ARTS AND SCIENCES

Requirements for Admission

and

General Information

Standing Committees

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* The Faculty of Arts and Sciences consists of the Faculties of the School of Liberal Arts, the Engineering School, the Graduate School, and the Crane Theological School, constituting one body for the discharge of certain administrative functions.

Requirements for Admission

Candidates for admission to the Department of Arts and Sciences must have received adequate preparation in certain subjects falling in two groups, known respectively as the Primary and the Secondary Group. A unit represents a year's study in any subject in a secondary school, representing approximately a quarter of a full year's work.

The Primary Group

English A, 2
English B, 1
*An Elementary Foreign Language, ancient or modern, 2;
History, 1;
Algebra, 1½;
Plane Geometry, 1.

Candidates for admission must present all the subjects of the Primary Group, and a certain part of the subjects of the Secondary Group, depending upon the degree in view. No subject offered in the Primary Group can be counted in the Secondary Group.

The Secondary Group

ELEMENTARY

Greek, 2
Latin, 2
French, 2
German, 2
Chemistry, 1
Physics, 1
Botany, 1
Zoology, 1
Geology or Geography, 1
Mechanical Drawing, 1
Freehand Drawing, 1
Shop Work, ½ to 2
Economics, ½
Musical Appreciation, ½
Music (Harmony), ½

INTERMEDIATE †

Latin, 1
French, 1
German, 1

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*Candidates for the degree of Bachelor of Science in the courses in Biology, Physics, and Chemistry should present Elementary German.

Engineering students will find it an advantage to present both French and German.

† The credit for intermediate subjects, as here given, is in addition to the credit for the corresponding elementary subjects.

ADVANCED *

- Greek, 1
- Latin, 1
- French, 1
- German, 1
- History
- Algebra, ½
- Trigonometry, ½
- Solid Geometry, ½
- Counterpoint, ½
- Pianoforte, Voice, or Violin, ½

Candidates for the degree of Bachelor of Arts or Bachelor of Divinity must submit, in addition to the subjects of the Primary Group, a selection of subjects from the Secondary Group aggregating 6½ units, according to the valuation indicated above. Candidates for the degree of Bachelor of Science in the School of Liberal Arts must submit from the Secondary Group subjects aggregating 6½ units, and candidates for the same degree in the Engineering School, subjects aggregating 5½ units.

The following conditions are to be observed:

1. The 6½ units for the course leading to A.B. must include those representing one advanced ancient language.
2. The 5½ units for any course in Engineering must include ½ unit in Solid Geometry.

Detailed information concerning the amount and character of the work demanded in preparation will be found on the following pages.

Detailed Statement of Requirements

Elementary English. *Three units.*

Preparation in English has two main objects: (1) command of correct and clear English, spoken and written; (2) ability to read with accuracy, intelligence, and appreciation.

The first object requires instruction in grammar and composition. English grammar should ordinarily be reviewed in the secondary school; and correct spelling and grammatical accuracy should be rigorously exacted in connection with all written work during the four years. The principles of English composition governing punctuation, the use of words, paragraphs, and the different kinds of whole composition, including letter-writing, should be thoroughly mastered; and practice in composition, oral as well as written, should extend throughout the secondary school period. Written exercises may well comprise narration, description, and easy exposition and argument based upon simple outlines. It is advisable that subjects for this work be taken from the student's personal experience, general knowledge, and studies other than English, as well as from the reading in literature. Finally, special instruction in language and composition should be accompanied by concerted effort of teachers in all branches to cultivate in the student the habit of using good English in recitations and in various exercises, whether oral or written.

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*The credit for advanced subjects, as here given, is in addition to the credit for the corresponding elementary and intermediate subjects.

The second object is sought by means of two lists of books, headed respectively *reading* and *study*, from which may be framed a progressive course in literature covering four years. In connection with both lists, the student should be trained in reading aloud and be encouraged to commit to memory some of the more notable passages, both in verse and in prose. As an aid to literary appreciation, he is further advised to acquaint himself with the most important facts in the lives of the authors whose works he reads, and with their place in literary history.

READING (A) *Two Units.*

The aim of this course is to foster in the student the habit of intelligent reading, and to develop a taste for good literature, by giving a first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads.

For Students Entering in 1914 and 1915

With a view to large freedom of choice, the books provided for reading are arranged in the following groups, from which at least ten units are to be selected, two from each group. Each unit is set off by semicolons.

I. The Old Testament, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the Odyssey, with the omission, if desired, of Books I, II, III, IV, V, XV, XVI, XVII; the Iliad, with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI; Virgil's Æneid. The Odyssey, Iliad, and Æneid should be read in English translations of recognized literary excellence.

For any unit of this group a unit from any other group may be substituted.

II. Shakespeare's Merchant of Venice; Midsummer Night's Dream; As You Like It; Twelfth Night; Henry the Fifth; Julius Cæsar.

III. Defoe's Robinson Crusoe, Part I; Goldsmith's Vicar of Wakefield; either Scott's Ivanhoe, or Scott's Quentin Durward; Hawthorne's House of the Seven Gables; either Dickens' David Copperfield, or Dickens' Tale of Two Cities; Thackeray's Henry Esmond; Mrs. Gaskell's Cranford; George Eliot's Silas Marner; Stevenson's Treasure Island.

IV. Bunyan's Pilgrim's Progress, Part I; The Sir Roger de Coverley Papers in the Spectator; Franklin's Autobiography (condensed); Irving's Sketch Book; Macaulay's Essays on Lord Clive and Warren Hastings; Thackeray's English Humourists; Selections from Lincoln, including at least the two Inaugurals, the Speeches in Independence Hall and at Gettysburg, the Last Public Address, and Letter to Horace Greeley, along with a brief memoir or estimate; Parkman's Oregon Trail; either Thoreau's Walden, or Huxley's Autobiography and selections from Lay Sermons, including the addresses on Improving Natural Knowledge, A Liberal Education, and A Piece of Chalk; Stevenson's Inland Voyage and Travels with a Donkey.

V. Palgrave's Golden Treasury (First Series), Books II and III, with especial attention to Dryden, Collins, Gray, Cowper, and Burns; Gray's Elegy in a Country Churchyard, and Goldsmith's Deserted Village; Coleridge's Ancient Mariner, and

Lowell's Vision of Sir Launfal; Scott's Lady of the Lake; Byron's Childe Harold, Canto IV, and Prisoner of Chillon; Palgrave's Golden Treasury (First Series), Book IV, with especial attention to Wordsworth, Keats, and Shelley; Poe's Raven, Longfellow's Courtship of Miles Standish, and Whittier's Snow Bound; Macaulay's Lays of Ancient Rome, and Arnold's Sohrab and Rustum; Tennyson's Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Browning's Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up at a Villa — Down in the City.

STUDY (B*) *One Unit.*

This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, or rhetorical structure, upon the exact meaning of words and phrases, the understanding of allusions, and the study of details (not neglecting formal grammar). For this close reading, a play, a group of poems, an oration, and an essay, are provided, as follows:

For Students Entering in 1914 and 1915

Shakespeare's Macbeth; Milton's L'Allegro, Il Penseroso, and Comus; either Burke's Speech on Conciliation with America, or both Washington's Farewell Address and Webster's First Bunker Hill Oration; either Macaulay's Life of Johnson, or Carlyle's Essay on Burns.

Examination.

However accurate in subject-matter, no paper will be considered satisfactory if seriously defective in punctuation, spelling, or other essentials of good usage.

The examination will be divided into two parts, one of which may be taken as a preliminary, and the other as a final.

The first part of the examination will be upon ten units chosen, in accordance with the plan described above, from the lists headed *reading;* and it may include also questions upon grammar and the simpler principles of rhetoric, and a short composition upon some topic drawn from the student's general knowledge or experience. On the books prescribed for reading, the form of the examination will usually be the writing of short paragraphs on several topics which the candidate may choose out of a considerable number. These topics will involve such knowledge and appreciation of plot, character-development, and other qualities of style and treatment as may be fairly expected of high school students. In grammar and rhetoric, the candidate may be asked specific questions upon the practical essentials of these studies, such as the relation of the various parts of a sentence to one another, the construction of individual words in a sentence of reasonable difficulty, and those good usages of modern English which one should know in distinction from current errors.

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*The important changes that went into effect with 1913 consisted of a greater emphasis upon formal grammar, rhetorical structure and, in the books under Group B, the study of details.

The second part of the examination will include composition and those books comprised in the list headed *study*. The test in composition will consist of one or more essays, developing a theme through several paragraphs, the subjects to be drawn from the books prescribed for *study*, from the candidate's other studies, and from personal knowledge and experiences quite apart from reading. For this purpose the examiner will provide several subjects, perhaps five or six, from which the candidate may select. The test on the books prescribed for study will consist of questions upon their content, form, and structure, and upon the meaning of such words, phrases, and allusions as may be necessary to an understanding of the works and an appreciation of their salient qualities of style. General questions may also be asked concerning the lives of the authors, their other works, and the periods of literary history to which they belong.

In place of the examinations in Elementary English a candidate may offer the examinations of the College Entrance Examination Board in English A and B.

Elementary German. *Two units.*

It is expected that the candidate will have studied the subject in a systematic course for two school years, each covering the equivalent of 120 sixty-minute periods, during which special attention will have been given to pronunciation and to writing from dictation, as well as to the use of clear and idiomatic English in translation.

The examination will consist of two parts: —

(*a*) The translation into German of easy English sentences, to test the candidate's knowledge of the following subjects: the declension of nouns, adjectives, and pronouns; the conjugation of weak and the more frequently recurring strong verbs; the prepositions and cases which they govern; the simpler uses of modal auxiliaries; the elementary rules of syntax and word order. Proficiency may also be tested by questions on these topics.

(*b*) The translation at sight of easy German prose. It is believed that the requisite facility may be acquired by the reading of from two to three hundred pages of easy German, with preference given to narrative style.

[The following list is made up from works suitable for reading in preparation for this examination; Anderson's Bilderbuch ohne Bilder; Arnold's Fritz auf Ferien; Baumbach's Schwiegersohn: Heyse's Hochzeit auf Capri; Storm's Immensee; Leander's Träumereien; Roth's Ein nordischer Held; Benedix, Der Prozess; Wilhelmi's Einer muss heiraten; Fulda's Das verlorene Paradies.]

In place of the examination in Elementary German a candidate may offer the examination of the College Entrance Examination Board in German A.

Intermediate German. *One unit.*

It is expected that the candidate will have pursued, in addition to the work done in preparation for Elementary German, an additional year's work of 120 hours. He should thus have acquired the ability to translate with considerable facility ordinary prose, similar to that of the preparatory course, and to answer briefly in German questions asked in that language by the instructor. Oral practice and dictation should be continued in this third year and a somewhat thorough acquaintance obtained with the rules of syntax, particularly with the subjunctive and infinitive moods; attention should also be given to the simpler facts of word formation — roots, prefixes and suffixes.

The examination will consist of two parts: —

(*a*) The translation into German of a connected passage of simple English, paraphrased from some German text.

(*b*) The translation at sight of passages of ordinary German prose. It is believed that the requisite facility may be acquired by reading in addition to the amount stated for Elementary German, about four hundred pages of narrative and dramatic prose and verse.

[The following list is made up from works suitable for reading in preparation for this examination: Ebner-Eschenbach's Freiherren von Gemperlein; Gerstäcker's Irrfahrten; Hoffmann's Historische Erzählungen; Meyer's Gustav Adolfs Page; Riehl's Burg Neideck und Fluch der Schönheit; Freitag's Aus dem Staat Friedrichs des Grossen, and die Journalisten; Schiller's Geisterseher, Neffe als Onkel, and Balladen; Scheffel's Trompeter von Säkkingen.]

In place of the examination in Intermediate German a candidate may offer the examination of the College Entrance Board in German B.

Advanced German. *One unit.*

This examination is open to candidates who have had the equivalent of a four years' course, with an average of 120 full hour periods per year. At the end of this course the student should be able to read, after brief inspection, any (save technical) modern German literature, if free from unusual textual difficulties; to put into German a passage of simple English prose, or to write in that language a brief theme on some assigned topic within his range; and to answer in German questions relating to the lives and certain works of the authors studied.

The examination will consist of three parts: —

(*a*) The writing in German of a paragraph, original or translated.

(*b*) The translation into English of extracts from at least three distinctively different authors. It is believed that the requisite facility may be acquired by reading in addition to the amount mentioned under Intermediate German, about five hundred pages of good literature in prose and verse.

(*c*) An oral test of proficiency in hearing and pronouncing German.

[The following list is made up from works suitable for reading in preparation for this examination: Fouqué's Undine; Scheffel's Ekkehard; Ludwig's Zwischen Himmel und Erde; Freytag's Soll und Haben; Hauff's Lichtenstein; Goethe's Dichtung und Wahrheit (extracts), Die neue Melusine, Hermann und Dorothea; Lessing's Minna von Barnhelm, Schiller's Wilhelm Tell, Jungfrau von Orleans, Geschichte des dreissigjährigen Krieges (third book); Grillparzer's Sappho; Kleist's Prinz von Homburg; Fulda's Talisman.]

In place of the examination in Advanced German, a candidate may offer the examination of the College Entrance Examination Board in German BC.

Elementary French. *Two units.*

It is expected that the candidate will have studied the subject in a systematic course for two school years, each covering the equivalent of 120 sixty-minute periods, during which special attention will have been given to pronunciation and to writing from dictation, as well as to the use of clear, idiomatic English in translation.

The examination will consist of two parts: —

(*a*) The translation into French of easy English sentences to test the candidate's knowledge of the following subjects: the conjugation of the regular and the most frequently recurring irregular verbs; the forms and positions of personal pronouns; the uses of the other pronouns and of possessive, demonstrative, and interrogative adjectives; the variation of nouns and adjectives for gender and number (except rare cases); the partitive construction. Proficiency may also be tested by questions on these topics.

(*b*) The translation at sight of a passage of easy French. It is believed that the requisite facility may be acquired by the reading of not less than three hundred and fifty pages of simple prose, with preference given to narrative.

[The following list is made up from works suitable for reading in preparation for this examination: The easier stories of Daudet, Verne, and Erckmann-Chatrian; Foa's Le petit Robinson and Contes Biographiques; Enault's Le Chien du Capitaine; Malot's Sans Famille; About's Le Roi des Montagnes; Labiche and Martin's La Poudre aux Yeux and Le Voyage de M. Perrichon; Sarcey's Le Siège de Paris.]

In place of the examination in Elementary French a candidate may offer the examination of the College Entrance Examination Board in French A.

Intermediate French. *One unit.*

It is expected that the candidate will have passed, in addition to the work done in preparation for Elementary French, an additional year's work of 120 hours. He should thus have acquired the ability to translate with facility ordinary prose or verse similar to that of the preparatory course, and to answer briefly in French questions asked in that language by the instructor. Oral practice and dictation should therefore be continued in this third year, together with a more detailed study of syntax, particularly of the use of moods and tenses, and of word formation and common idiomatic phrases.

The examination will consist of two parts: —

(*a*) The translation into French of a connected passage of simple English.

(*b*) The translation at sight of passages of ordinary French prose or dramatic verse. It is believed that the requisite facility may be acquired by reading, in addition to the amount required for Elementary French, not less than four hundred pages of prose and verse, preference still being given to narrative form.

[The following list is made up from works suitable for reading in preparation for this examination: About's stories; Daudet's La Belle-Nivernaise; La Brète's Mon Oncle et mon Curé; Loti's Pêcheur d'Islande; George Sand's Les Maîtres Mosaïstes; Mérimée's Colomba; Thierry's Récits des Temps mérovingiens; Thiers's L'Expédition de Bonaparte en Egypte; Vigny's La Canne de Jonc; Corneille's Horace; Molière's L'Avare and Le Bourgeois Gentilhomme; Racine's Athalie; Augier and Sandeau's Le Gendre de M. Poirier; Coppée's poems.]

In place of the examination in Intermediate French a candidate may offer the examination of the College Entrance Examination Board in French B.

Advanced French. *One unit.*

This examination is open to candidates who have had the equivalent of a four year's course, with an average of 120 full hour periods per year. At the end of this course the student should be able to read at sight, with the help of a vocabulary of special or technical expressions, difficult French of not earlier than the seventeenth century; to write in French a short essay on some simple subject connected with the works read in preparation, and to take part in a simple conversation in French.

The examination will consist of three parts: —

(*a*) The writing in French of an original passage of at least 150 words on some assigned subject.

(*b*) The translation into English of extracts from at least three distinctly different authors. It is believed that the requisite facility may be acquired by reading, in addition to the amount mentioned under Intermediate French, from six hundred to one thousand pages of standard French, inclusive of works merely commented upon in class.

(*c*) An oral test of proficiency in hearing and pronouncing French.

[The following list is made up from works suitable for reading in preparation for this examination: Taine's Origines de la France contemporaine; Sainte-Beuve's Causeries du Lundi (Holt Ed.); Voltaire's Prose (Heath Ed.); Balzac's La Recherche de l'Absolu; Dumas' Les trois Mousquetaires (Ginn Ed.); Pelissier's Anthologie des Prosateurs français contemporains (Paris, Delagrave Ed.); Racine's Andromaque, Britannicus, Athalie; Corneille's Cinna and Polyeucte; Molière's Les Précieuses Ridicules; Beaumarchais' Mariage de Figaro; Hugo's Hernani and Ruy Blas.]

In place of the above, a candidate may offer the examination of the College Entrance Examination Board in French BC.

Elementary Latin. *Two units.*

The Latin reading shall be not less in amount than Cæsar, Gallic War, I—IV, and should be selected by the schools from Cæsar (Gallic War and Civil War) and Nepos (Lives). Candidates will be examined in translation at sight of passages from the above authors, also in grammar and composition.

In place of the examination for two units in Elementary Latin a candidate may offer the following examination of the College Entrance Examination Board:

New Requirements, 3.

Intermediate Latin. *One unit.*

The Latin reading, without the prescription of particular authors and works, shall be not less in amount than Cæsar, Gallic War, I—IV, and Cicero, the orations against Catiline, for the Manilian Law, and for Archias; this reading should be selected from Cæsar (Gallic War and Civil War) and Nepos (Lives), Cicero (orations, letters, and De Senectute) and Sallust (Catiline and Jugurthine War).

Candidates will be examined in translation at sight of passages from Cæsar and Cicero. The vocabulary, constructions, and range of ideas will be suited to the preparation secured by the reading indicated above. There will also be an examination on the following prescribed reading: Cicero, orations for the Manilian Law and for Archias.

Or the requirement in poetry, as defined under Advanced Latin, may be offered as optional in place of the third year prose.

The examinations in grammar and composition will demand thorough knowledge of all regular inflections, all common irregular forms, and the ordinary syntax and vocabulary of the prose authors read in school, with ability to use this knowledge in writing simple Latin prose. The words, constructions, and range of ideas called for in the examination in composition will be such as are common in the reading of the years covered by the examination.

In place of the examination for three units in Intermediate Latin a candidate may offer the following examinations of the College Entrance Examination Board:

New Requirements, 1, 2, and 4.

Advanced Latin. *One unit.*

I. AMOUNT AND RANGE OF THE READING REQUIRED

1. The Latin reading, without regard to the prescription of particular authors and works, shall be not less in amount than Cæsar, Gallic War, I—IV; Cicero, the orations against Catiline, for the Manilian Law, and for Archias; Vergil, Æneid, I—VI.

2. The amount of reading specified above shall be selected by the schools from the following authors and works: Cæsar (Gallic War and Civil War) and Nepos (Lives); Cicero (orations, letters, and De Senectute) and Sallust (Catiline and Jugurthine War); Vergil (Bucolics, Georgics, and Æneid) and Ovid (Metamorphoses, Fasti, and Tristia).

II. SUBJECTS AND SCOPE OF THE EXAMINATIONS

1. *Translation at sight.* Candidates will be examined in translation at sight of both prose and verse. The vocabulary, constructions, and range of ideas of the passages set will be suited to the preparation secured by the reading indicated above.

2. *Prescribed Reading.* Candidates will be examined also upon the following prescribed reading: Cicero, orations for the Manilian Law and for Archias, and Vergil, Æneid, I, II, and either IV or VI at the option of the candidate, with questions on subject-matter, literary and historical allusions, and prosody. Every paper in which passages from the prescribed reading are set for translation will contain also one or more passages for translation at sight; and candidates must deal satisfactorily with both these parts of the paper, or they will not be given credit for either part.

3. *Grammar and Composition.* See statement under Intermediate Latin.

In place of the examination for four units in Latin a candidate may offer the following examinations of the College Entrance Examination Board:

New Requirements, 1, 2, 4, and 5.

SUGGESTIONS CONCERNING PREPARATION

Exercises in translation at sight should begin in school with the first lessons in which Latin sentences of any length occur, and should continue throughout the course with sufficient frequency to insure correct methods of work on the part of the student. From the outset particular attention should be given to developing the ability to take in the meaning of each word — and so, gradually, of the whole sentence — just as it stands; the sentence should be read and understood in the order of the original, with full appreciation of the force of each word as it comes, so far as this can be known or inferred from that which has preceded and from the form and the position of the word itself. The habit of reading in this way should be encouraged and cultivated as the best preparation for all the translating that the student has to do. No translation, however, should be a mechanical metaphrase. Nor should it be a mere loose paraphrase. The full meaning of the passage to be translated, gathered in the way described above, should finally be expressed in clear and natural English.

A written examination cannot test the ear or tongue, but proper instruction in any language will necessarily include the training of both. The school work in Latin, therefore, should include much reading aloud, writing from dictation, and translation from the teacher's reading. Learning suitable passages by heart is also very useful, and should be more practised.

The work in composition should give the student a better understanding of the Latin he is reading at the time, if it is prose, and greater facility in reading. It is desirable, however, that there should be systematic and regular work in composition during the time in which poetry is read as well; for this work the prose authors already studied should be used as models.

Elementary Greek. *Two units.*

The examination will be adapted to the proficiency of those who have studied Greek in a systematic course for two years. It will consist of two parts, which cannot be taken separately: —

(*a*) The translation at sight of passages of simple Attic prose.

(*b*) An examination on Xenophon's Anabasis, directed to testing the candidate's mastery of the ordinary forms, constructions, and idioms of the language.

Before taking the elementary examination the candidate should have read, in addition to the usual grammar work, at least four books of Xenophon's Anabasis, or an equivalent.

In place of the examination in Elementary Greek a candidate may offer the following examinations of the College Entrance Examination Board.

Greek A i and ii, B, and G.

Advanced Greek. *One unit.*

The examination will be adapted to the proficiency of those who have studied Greek in a systematic course for three years. The two parts of the examination may be taken separately: —

(*a*) The translation at sight of an average passage of Homer; with questions on ordinary forms, constructions, and idioms, and on prosody.

(*b*) The translation into Attic prose of a passage of connected English narrative. The passage set for translation will be based on some portion of the Greek prose works usually read in preparation for college.

Before taking the examination in Advanced Greek the candidate should have completed at least four books of Xenophon's Anabasis, or their equivalent in Attic prose, and six books of Homer's Iliad, or their equivalent in the Odyssey. It is recommended that Greek composition accompany all stages of the preparation, and that the pupil be practiced in reading Greek aloud from the beginning of the course.

In place of the examination in Advanced Greek a candidate may offer the following examinations of the College Entrance Examination Board.

Greek A i, B, C or CH, F, and G.

Elementary History. *One unit.*

One of the following: —

1. The History of Greece and Rome. (*a*) The history of Greece to the death of Alexander, with due reference to Greek life, literature, and art, as treated in the histories of Botsford, Oman, West, or Myers. (*b*) The history of Rome to the accession of Commodus, with due reference to Roman literature and government. Such texts as those of Morey, Botsford, West, or Allen will indicate the character of the work desired.

While the periods indicated above will be accepted as satisfying the entrance requirements in ancient history, it is strongly recommended that the study of the history of Greece be continued to the conquest of Greece by Rome, and that the history of Rome be pursued to the fall of the Western Empire.

This does not necessarily imply any increase in the time devoted to Greek and Roman history.

2. The History of England. The history of England, with due reference to social and political development. The histories of Andrews, Larned, and Montgomery will indicate the character of the work expected.

3. The History and Government of the United States. Such texts as McLaughlin's History of the American Nation, Johnston's or Channing's History of the United States, and Fiske's Civil Government should be used.

It is recommended that all candidates for admission to the courses leading to the degree of A.B. or B.D. should offer Greek and Roman history.

The elementary requirement in history implies one year's work of not less than five periods a week. A note-book of not less than fifty written pages, based upon three hundred pages of collateral reading, must be presented at the time of examination. Equivalents for the subjects named above will be accepted, but candidates desiring to offer substitutes must give notice to the Secretary of the Faculty at least one month previous to the time set for the examination. Work in the text-book should be constantly accompanied by collateral reading. The attention of teachers is called to the Report of the Committee of Seven, published by the Macmillan Company, New York, under the title, "The Study of History in Schools."

In place of any one of the examinations described above a candidate may offer any one of the four examinations in History of the College Entrance Examination Board.

Advanced History.

One of the following: —

1. The History of Greece and Rome, as described above, for those only who have offered English history or the history and government of the United States as primary subjects.

2. The History of England as described above, for those who have not offered English history as a primary subject.

3. The History and Government of the United States, for those who have not offered History and Government of the United States as a primary subject.

Each of these subjects requires one year's study of not less than five recitation-periods a week. A note-book of not less than fifty written pages, based upon three hundred pages of collateral reading, must be presented at the time of the examination. Equivalents for the subjects outlined above will be accepted, upon due notice, as indicated above under Elementary History.

In place of any of the examinations in Advanced History a candidate may offer any one of the four examinations in History of the College Entrance Examination Board, provided that the subject so offered has not been accepted for the Elementary History requirement.

Mathematics.

A knowledge of the metric system, and ability to perform accurately the ordinary processes of arithmetic, are presumed. Subjects 1 and 2 are required in the Primary Group.

1. Algebra, through quadratic equations in one and two unknown quantities, problems depending on quadratic equations, the progressions, ratio and proportion, and the binomial theorem for positive integral exponents. *One and one-half units.*

2. Plane Geometry, including the usual theorems on straight lines, angles, rectilinear figures, circles, and regular polygons; similar triangles and proportion; construction; original exercises in demonstration; numerical problems in mensuration. *One unit.*

3. Advanced Algebra: Permutations and combinations; complex numbers and the graphical representation of sums and differences; determinants including the use of minors, and the solution of linear simultaneous equations; solution of numerical equations of higher degree and so much of the theory of equations, with graphical methods, as is necessary for their treatment, including Descartes' rule of signs and Horner's method. Credit in Advanced Algebra is given only on examination. *One-half unit.*

4. Solid Geometry, including properties of straight lines and planes, dihedral and polyhedral angles; of projections, of polyhedrons, including prisms, pyramids, and the regular solids; of cylinders, cones, and spheres; of spherical triangles, and the measurement of surfaces and solids. *One-half unit.*

5. Plane Trigonometry, including the definition and relations of the six trigonometrical functions as ratios, proof of important formulæ, solution of trigonometric equations of a simple character, theory of logarithms and use of tables, solution of right and oblique plane triangles. *One-half unit.*

In the last three subjects, the school should insist upon the same amount of work and aim at the same standard of scholarship as the college requires in its courses in these subjects.

In place of the examinations in Mathematics a candidate may offer the examinations of the College Entrance Examination Board as follows:

Math. A for 1; Math. C for 2; Math. B for 3; Math. D for 4; Math. F for 5.

Physics. *One unit.*

The unit in Physics consists of at least 120 periods of sixty minutes each. Time spent in the laboratory shall be counted at one-half its face value. The course of instruction should include: (1) The study of one standard text-book. (2) Individual laboratory work consisting of experiments requiring at least the time of 30 double periods. Each student should perform at least 30 experiments, so distributed as to cover as fully as possible the subject matter of the text-book.

In lieu of the presentation of the laboratory note-book, at the time of the examination, the candidate must present a certificate in the following form:

TEACHER'S CERTIFICATE

.... School

.... 19

I certify that .... has personally performed and properly recorded in a suitable note-book .... experiments in the physical laboratory of the .... School, during the year ....

The entire course has occupied time equal to .... periods of 60 minutes each, of which .... hours have been given to the laboratory work and .... hours to lecture and recitation work.

Signed ....

Teacher of Physics.

The teacher may here enter the final grade of ... . per cent.

In place of the above, candidates may present the examination of the College Entrance Examination Board in Physics.

Chemistry. *One unit.*

Preparation for this requirement presupposes a course in general inorganic chemistry (non-metals and metals) of not less than five periods a week for a year. The amount of class work should equal that in An Introduction to the Study of Chemistry, by Ira Remsen, and the experiments should be equivalent to those in Remsen's Laboratory Manual. Time spent in the laboratory shall be counted at one-half its face value. The experiments must be performed by the student, and a certified laboratory note-book must be presented at the time of the examination.

In place of the above, candidates may present the examination of the College Entrance Examination Board in Chemistry.

Botany and Zoology. *One unit each.*

In Botany and Zoology the examiners give more weight to the character of the work than to time spent; but at least five periods a week for a year must be given to each subject presented, and of this at least a half should consist of laboratory work. Certified copies of laboratory note-books must be presented. The work should be in structural and physiological lines and should include a detailed study of at least ten types.

In place of the examinations in Botany and Zoology, candidates may offer the examinations in Botany and Zoology of the College Entrance Examination Board.

Geology or Geography. *One unit.*

1. Geology: Le Conte's Elements of Geology or a book of equivalent grade, including a similar account of evolutionary theory.

2. Geography: Davis, or book of equivalent grade.

At least five periods a week for a year must have been given to the subject presented. There should have been some laboratory work and excursions. Certified copies of note-books of laboratory work and excursions must be presented.

In place of the examination in Geography, candidates may offer the examination in Geography of the College Entrance Examination Board.

Freehand Drawing.* *One unit.*

Such a knowledge of the fundamental principles of perspective is required as shall enable the student to draw a simple geometric figure with or without the use of a model. Certified drawings from a systematic course must be submitted for approval and the student may be examined on all points in doubt.

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* Not more than two units may be counted by any candidate in the subjects of Drawing and Shopwork.

In place of the above the candidate may offer the examination in drawing of the College Entrance Examination Board.

Mechanical Drawing.* *One unit.*

Accuracy and neatness in drawing is of the first importance, and no amount of work will make amends for neglect in these respects. The student must be familiar with the use of ordinary instruments, and able to solve geometrical problems with accuracy and rapidity. He must have an elementary knowledge of projection, intersection and development, and should also be practiced in the drawing of the ellipse, the parabola, and the hyperbola. The suggested course is included in the first one hundred pages of Anthony's Elements of Mechanical Drawing. Certified drawings must be submitted for approval and the student may be examined on all point in doubt.

Shopwork.*

The following units are given for courses satisfactorily pursued in well organized and fully equipped manual training or technical high schools in which the broad foundations of manual and graphic culture are given. The elementary work in the several courses must be thoroughly covered, and no credit will be given for premature engineering work.

Joinery	*One-half unit*
Wood Turning and Elementary Pattern Making	*One-half unit*
Forging	*One-half unit*
Bench and Machine Metal Fitting	*One-half unit*

Details of the work required for preparation in the above courses may be obtained by application to the Department of Mechanic Arts.

Elementary Economics. *One-half unit.*

Preparation for Economics presupposes that the candidate has studied the subject in a systematic course of at least three periods a week for one full year. Credit in Economics will be given only on examination. The examination will be based upon such text-books as Bullock's or Seager's Introduction to the Study of Economics. A knowledge of civics and, particularly, modern industrial history is of great value in supplementing the study of economic theory.

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* See foot-note on preceding page.

Music.

Entrance credit in Music is given only on examination. Not more than one unit in Music may be counted by any candidate.

(A) MUSICAL APPRECIATION. *One-half unit.*

The examination will be adapted to the attainment of those who have had one year's systematic training, with three lessons a week, or its equivalent. The candidate is expected to have (1) a general knowledge of the principal musical forms—song, classic dance, fugue, sonata (all movements), symphony—and of their historical development; (2) a general knowledge of the lives and environment of at least ten composers, including Bach, Mozart, Beethoven, Schubert, Chopin, and five of the following: Purcell, Handel, Gluck, Haydn, Cherubini, Weber, Rossini, Glinka, Mendelssohn, Schumann, Wagner, Verdi; (3) familiarity with certain designated works, the list of which may be had on application to the Department of Music. In the examination on these works, the candidate will be expected to identify characteristic portions of the works set, when played in any key by the examiner; and to give intelligent information concerning the form and character of the works themselves. The test will not require ability to perform, nor to read from printed music.

(B) HARMONY. *One-half unit.*

The examination will be adapted to the proficiency of those who have had one year's systematic training, with three lessons a week, or its equivalent. The candidate should have acquired (1) the ability to harmonize, in four vocal parts, simple melodies of not fewer than eight measures, in soprano or in bass: these melodies will require a knowledge of triads and inversions, of diatonic seventh chords and inversions, in the major and minor modes; and of modulation, transient or complete, to nearly-related keys; (2) analytical knowledge of ninth chords, all non-harmonic tones, and altered chords (including augmented chords). [Students are encouraged to apply this knowledge in their harmonization.]

It is urgently recommended that systematic ear-training (as to interval, melody, and chord) be a part of the preparation for this examination. Simple exercises in harmonization at the pianoforte are recommended. The student will be expected to have a full knowledge of the rudiments of music, scales, intervals, and staff-notation, including the terms and expression-marks in common use.

(D) PIANOFORTE, OR (E) VOICE, OR (F) VIOLIN. *One-half unit.*

The examination in each of these subjects will consist of a test in theory, and a test in performance. The former will be conducted in writing, and will be adapted to the proficiency of those who have had one year's systematic training, with one lesson a week, or its equivalent. The candidate should have acquired:

A knowledge of the rudiments of music, scales, intervals, and staff-notation, including the terms and expression-marks in common use; the ability to analyze the harmony and form of hymn-tunes and simplest pieces for the pianoforte, involving triads and the dominant seventh chord and their inversions, passing tones, and modulation to nearly-related keys; the ability to harmonize, on paper, in four vocal parts, melodic fragments involving the use of triads and the dominant seventh chord and their inversions in major keys.

As a basis of the test in performance, the candidate is to furnish a detailed statement from the teacher, showing the course of instrumental or vocal study pursued.

In place of the above, candidates may offer the corresponding examination of the College Entrance Examination Board: Music A, B, and D or E or F.

METHODS OF ADMISSION

Admission to Tufts College may be obtained by examination, by certificate, or by a combination of the two methods. Every candidate for admission must present a testimonial of good character from the Principal under whom he was prepared for college.

Admission by Examination

In June, 1914, the admission examinations of this College will be the examinations of the College Entrance Examination Board, of which Tufts College is a member. The examinations will be held during the week June 15–20, 1914.

All applications for examinations must be addressed to the Secretary of the College Entrance Examination Board, Post Office Sub-Station 84, New York, N. Y., and must be made upon a blank form, to be obtained from the Secretary of the Board upon application.

Applications for examination at points in the United States east of the Mississippi River, also at Minneapolis, St. Louis, and other points on the Mississippi River, must be received by the Secretary of the Board at least two weeks in advance of the examinations, that is, on or before Monday, June 1, 1914; applications for examination elsewhere in the United States or in Canada must be received at least three weeks in advance of the examinations, that is, on or before Monday, May 25, 1914; and applications for examination outside of the United States and Canada must be received at least five weeks in advance of the examinations, that is, on or before Monday, May 11, 1914.

Applications received later than the dates named will be accepted when it is possible to arrange for the admission of the candidates concerned, but only upon the payment of $5.00 in addition to the usual fee.

The examination fee is $5.00 for all candidates examined at points in the United States and Canada, and $15.00 for all candidates examined outside of the United States and Canada. The fee (which cannot be accepted in advance of the application) should be remitted by postal order, express order, or draft on New York to the order of the College Entrance Examination Board.

A list of the places at which examinations are to be held by the Board in June, is published about March 1. Requests that the examinations be held at particular points, to receive proper consideration, should be transmitted to the Secretary of the Board not later than February 1.

For the convenience of those who present the examinations of the College Entrance Examination Board, the following table of equivalents is presented:

TUFTS COLLEGE ENTRANCE SUBJECTS	COLLEGE ENTRANCE EXAMINATION BOARD EQUIVALENT
English A	English A
English B	English B
Elementary German	German A
Intermediate German	German B
Advanced German	German BC
Elementary French	French A
Intermediate French	French B
Advanced French	French BC
Elementary Latin	Latin 1 and B, or 3
Intermediate Latin	Latin 1, B and C, or 1, 2 and 4
Advanced Latin	Latin 1, B, C, D, P and Q, or 1, 2, 4 and 5
Elementary Greek	Greek A i and ii, B, and G
Advanced Greek	Greek A i, B, C or CH, F, and G
Elementary History	History, A, B, C, or D
Advanced History	History, A, B, C, or D
Mathematics	
Algebra	Mathematics A
Plane Geometry	Mathematics C
Advanced Algebra	Mathematics B
Solid Geometry	Mathematics D
Trigonometry	Mathematics F
Physics	Physics
Chemistry	Chemistry
Botany	Botany
Zoology	Zoology
Geology or Geography	Geography
Freehand Drawing	Drawing
Music, A, B, D, E, F	Music, A, B, D, E, F

Entrance examinations will be conducted at Tufts College in September. These examinations are held on the Saturday, Monday, and Tuesday preceding the beginning of the college year, in accordance with the program printed in the calendar, pages 3 and 4.

All candidates for examination in September are required to register at the office of the Registrar before taking their examinations. A fee of $5.00 is charged all candidates for the September examinations. Those who subsequently enter the Department of Arts and Sciences will not be required to pay the registration fee.

At the regular examination those who will be candidates for admission to the Freshman class one year later may present themselves for examination in the subjects of the Required Group, and in others in which their teachers may certify that they are adequately prepared.

Admission by Certificate

In place of examinations, certificates will be accepted from preparatory schools which have been approved by the New England College Entrance Certificate Board. All schools in New England which desire the certificate privilege should apply to the Secretary of the Board, Professor Frank W. Nicolson, Wesleyan University, Middletown, Conn., before April 1 of the year for which the certificate privilege is desired.

Applications for the certificate privilege for schools outside of New England should be made by the Principal on a blank provided for the purpose by the Registrar of the College. Applications should be received before April 1, in order that the school may be placed upon the approved list for the next academic year.

The academic diploma of the Regents of the State of New York will be accepted in satisfaction of the requirements for admission when such diploma covers the subjects required for entrance.

Credit in the following subjects, which are outside the ordinary preparatory school curriculum, is allowed only upon examination: Advanced Algebra, Economics, and Music.

Certificates showing that candidates have fulfilled the entrance requirements of another college or university in subjects required for admission to Tufts College will ordinarily be accepted for corresponding subjects.

Certificates should be in the hands of the Registrar of the College at least one month before the opening of the college year. Blank forms of certificates will be sent upon request to the Registrar, Tufts College, Massachusetts.

General Information

REGISTRATION

Every student is required to file at the office of the Registrar a plan of study for the term, on the opening day of the term.

The registration is made in triplicate on blanks furnished for the purpose, one copy to be kept on file by the Registrar, one by the Dean, the third to be used, in case of Freshmen, by advisers, and in case of special students and members of the upper classes, by major instructors. Each student also furnishes such data as are required by the Registrar for class lists. Registration is made for the first half-year in accordance with the following schedules: —

I. FOR STUDENTS IN THE SCHOOL OF LIBERAL ARTS, THE CRANE THEOLOGICAL SCHOOL, AND THE GRADUATE SCHOOL:

8.30–9 A.M. — All students registering for the first time as candidates for A.B. or B.S., or as special students, will pay the registration fee of five dollars at the Bursar's office, unless they have already paid an examination fee to the College.

9–9.30 A.M. — All students receive registration blanks and notice of appointment with major instructor or adviser, at the Dean's office.

9.10–10.40 A.M.—All students meet their major instructors or advisers in accordance with appointments.

9.45 A.M.—All students registering for the first time assemble in Room 4, Ballou Hall, for instruction concerning registration, and assignment to advisers.

2–3 P.M. — Students obtain the necessary signatures and file program cards at the Registrar's office. The approval of the major instructor or adviser is to be obtained after the separate subjects have been approved by the respective instructors.

On Friday, the second day of the term, all classes meet for assigned periods of fifteen minutes. See below, under Program.

Regular program appointments are in force on Saturday.

II. FOR STUDENTS IN THE ENGINEERING SCHOOL:

9.30–10.30 A.M.—All students registering for the first time will pay the registration fee of five dollars at the Bursar's office, unless they have already paid an examination fee to the College.

10–12 A.M.—All students in this School obtain blanks and file programs at the Registrar's office.

Members of the three upper classes register in accordance with programs prepared at conferences during the June examination period.

11 A.M. — All Freshmen assemble in the chapel for instructions concerning registration, and information regarding courses.

Regular program appointments are in force on Friday.

Consultations concerning programs for the second half-year are held by appointments with advisers and major instructors during the examination period. On the first day of the second term, between 11 and 12 o'clock, students file their individual programs. Recitations begin in accordance with the regular program on Tuesday, the second day of the term.

A registration fine of two dollars is imposed upon students who fail to register in person during the time prescribed above. This rule does not apply to students registering for the first time. Students are not recognized as members of classes until they have met all requirements of registration.

During the hours set apart for registration, instructors may be seen for consultation and for approval of plans of study, in rooms to be announced by posted bulletins.

PROGRAM LIMITATION

Plans of study are subject to the following regulations:

I. For students in the School of Liberal Arts and the Crane Theological School:

No Freshman shall take a program of more than sixteen term hours for the first half-year; nor shall a program of more than fifteen term hours be taken by any student who has received for the preceding half-year grade L in subjects aggregating three term hours, or grade C in subjects aggregating more than six term hours; except that each student is permitted to take a program of eighteen hours in his Junior year, with the consent of his major instructor. But a student who has failed in a subject may repeat that subject, provided his program is not thereby increased to more than eighteen term hours.

A program in excess of eighteen term hours shall not be allowed except by special permission of the Faculty.

Physical Education is disregarded in the consideration of program limitation.

II. For Students in the Engineering School:

The Freshman program is prescribed. Permission to vary the Freshman program, to take a program in excess of eighteen term hours, or to take a subject out of course, must be obtained by petition to the Committee on Promotions.

PROGRAM

All subjects whose hours are not definitely fixed in the tabular program are so far as possible assigned at a meeting in Ballou 4 at 12 M. on the second day of the first half-year, and at the same hour on the first day of the second half-year. Every student concerned is required to be present at this time, either in person or by a proxy furnished with a complete tabular program of class engagements. Every instructor concerned is expected to be present in person. These appointments supersede all others. No assignment or change of hour is official except as posted by the Committee on Program.

Any instructor is permitted, after the second full week of a term, to transfer a subject to another program hour, under the following conditions: (a) all students taking the subject must have the new hour free; (b) previous notice must be given to the Committee on Program: (c) the change, if finally made, must be reported at the College Office.

If such a change can be made in two consecutive years, the subject may be permanently transferred to the new hour.

CHANGES IN REQUIREMENTS

It is the policy of the Faculty not to introduce changes in requirements without due notice in the catalogue, and not to impose additional requirements upon classes already in college. Immediate changes in the curriculum and in the program may occasionally be necessary, and under such circumstances the Faculty reserves the right to make equitable adjustment for students already in college.

PROMOTIONS

All candidates for degrees are classified as Freshmen until they have removed all entrance conditions.

Candidates for the degree of Bachelor of Arts or Bachelor of Science in the School of Liberal Arts must have received, for promotion to the Sophomore class, a credit of not less than twenty-four term hours, and for promotion to the Junior class a credit of not less than fifty-seven term hours. To become a member of the Senior class, a student must have completed all the prescribed work, and have credit for not less than eighty-seven term hours.

Candidates for the degree of Bachelor of Science in the Engineering School must have received, for promotion to the Sophomore class, a credit of not less than twenty-nine term hours; for promotion to the Junior class a credit of not less than sixty-four term hours; and for promotion to the Senior class a credit of not less than ninety-nine term hours.

GRADES OF SCHOLARSHIP

A student's rank is officially recorded by letters, as follows: **A,** excellent; **B,** good; **C,** fair; **L,** passed with low standing; **F,** work incomplete or unsatisfactory; **FF,** complete failure.

The mark **F** imposes a condition which must be removed at a date to be determined by the Committee on Promotions, on consultation with the instructor. In case a mark of **F** is not removed at the date thus determined, the entry will be changed to **FF**. The student must then discontinue any dependent subjects which he is taking, and can obtain a clear record only by repeating the subject in which **F** was given. The responsibility for the removal of the condition rests with the student, who is required to make the necessary arrangement with the instructor and to present at the office a statement from the instructor that the work has been accomplished.

Reports of the work of Freshmen are sent to parents after the first term. Reports for the year are sent in July to all.

Except as above stated, marks are not issued from the office.

MAJOR SUBJECTS

Every candidate for the degree of Bachelor of Arts or Bachelor of Science in the School of Liberal Arts shall choose a major subject before the beginning of the Sophomore year.

A change of major subject may be made not later than the end of the Junior year, by vote of the Committee on Promotions on petition approved by the two major instructors concerned.

A second major subject may be granted not later than the end of the Junior year, under the same conditions.

HONORS

Final Honors will be conferred at Commencement upon any member of the graduating class who shall have attained Grade A in approved subjects aggregating not less than eighteen term hours in a major department, and an average of Grade B in the collateral subjects. Subjects marked in the catalogue with an asterisk (*) will not count for Honors. Those marked with a double asterisk (**) will be counted for Honors only when special requirements, to be defined by the instructors, have been complied with. Final Honors will be conferred only upon recommendation of the head of the department in which Honors are desired.

Honorable Mention will be made, in the Commencement program and in the annual catalogue, of a student who has attained, during the two years immediately preceding graduation, Grade A in nine term hours and not less than Grade B in three additional term hours of approved work in one department. Subjects marked in the Catalogue with an asterisk (*) or with a double asterisk (* *) are under the conditions explained above as applying to Final Honors.

Candidates for Honorable Mention are expected to report to the Office on or before May 1 the department or departments in which they look for such distinction.

The subjects open for Honors and Honorable Mention in the five major departments in the Engineering School are as follows: 45-1, 45-2, and 45-12 Applied Mechanics may be counted in any department; also, in the Civil Engineering department, all subjects in Civil Engineering (41) except 41-3 Surveying; in the Structural Engineering department, all subjects in Applied Mechanics (45) and Structural Engineering (47); in the Mechanical Engineering department, all subjects in Mechanical Engineering (51); in the Electrical Engineering department, all subjects in Electrical Engineering (61); and in the Chemical Engineering department, all subjects in Chemistry (35) except 35-1 General Chemistry.

ADMISSION FROM OTHER COLLEGES

Students who have pursued study in any other college of equal rank, and have been honorably dismissed therefrom, are admitted to Tufts College as unclassified students. They will not be assigned to a definite class until such time as the quality of their work in Tufts College shall have given a basis for rating. Such students must present satisfactory certificates showing the amount and character of work already accomplished, in order to obtain credit on a course of this College.

SPECIAL STUDENTS

Students who are not candidates for a degree, and who wish to pursue a special course of studies, in one or at the most two departments, will be admitted to the College, subject to the following regulations: —

1. Every Special Student shall choose a major department, and shall make up a plan of study under the direction and subject to the approval of the major instructor. If subjects are taken in two departments, they shall be allied.

2. The student shall satisfy the instructor in each subject included in the approved plan of study that he is able to pursue the work.

3. First-year Special Students are limited to sixteen program hours, and thereafter the same rules apply to them as to regular students.

4. A Special Student, on leaving College, shall be entitled to a certificate giving the grade attained in each subject pursued, and signed by the President and the Registrar.

TERMS AND VACATIONS

Commencement occurs on the third Wednesday in June, and the college year begins on the Thursday following the third Wednesday in September. The year is divided into two terms. College exercises are suspended on certain dates in accordance with the program published at the beginning of the catalogue. An examination period of five days is held at the close of each half-year, during which time the daily class exercises are suspended.

Students are required to report in person at the Registrar's office within two hours after the last program appointment of the student preceding each vacation of more than a single day, except at the mid-year period; and within two hours before the first program appointment following such vacation.

A fine of two dollars will be imposed on each student who shall fail to report as above provided. The regularly appointed registration of studies at the beginning of each term shall be construed as reporting in person.

ABSENCES

Students are required to notify the Registrar at the beginning of an absence from any cause involving more than three consecutive program appointments. This report may be made in advance, and should state the cause of absence and its probable duration. A similar report is to be made before entering upon college work after the absence.

These reports are for the information of the college authorities, and do not excuse the student from chapel attendance, nor from his obligations to the various instructors.

For the first failure to make such a report a fine of fifty cents shall be levied, and for each subsequent failure a fine of two dollars. In case of the absence of any student organization, notice may be given for all by one authorized representative.

No student organization shall be allowed to make engagements involving absence from college exercises unless such engagements are approved by the appropriate committee of the Faculty.

A report filed in accordance with these regulations shall not take the place of the required registration before and after vacations of more than a single day.

Absence from Examinations.—Students absent from examinations and requiring special examinations to make up for such absence are charged two dollars for each special examination.

OFFICE HOURS

The President may be found in his office in the morning from 8.45 to 9.45. The Dean of the School of Liberal Arts is in his office in Ballou Hall, and the Dean of Jackson College in her office in Miner Hall, throughout the forenoon, except for class engagements. The Dean of the Engineering School may be consulted at his office in the Bromfield-Pearson Building, between 11.00 and 1.00, and at other times by special appointments. The office of the Registrar is open every morning, from 8.45 to 1.00, and every afternoon except Saturday, from 2.00 to 5.00. The Bursar will be in his office in Ballou Hall during term time, Monday, Wednesday, and Friday mornings, from 8.30 to 12.00 o'clock, and on Tuesday and Thursday afternoons from 2.30 to 5.00.

RELIGIOUS OBSERVANCES

Goddard Chapel, erected in 1882–83, is the gift of Mrs. Mary T. Goddard, as a memorial of her husband, the late Thomas A. Goddard. Attendance upon morning prayers is required.

The RUSSELL LECTURE, established in accordance with a bequest of the late James Russell of Arlington, is delivered before the Trustees, Faculty, and students, by either a clergyman or a layman, on a subject prescribed by the testator.

Two subjects are presented, in alternate years.

The subject for 1913 was "*The Sufficiency of the Promises of the Gospel to meet the Reasonable Wants of Man both in Time and in Eternity.*"

The subject for 1914 is "*The Importance of Christian Faith and Belief in the Formation of the Character of the Good Citizen and the Good Man.*"

TUFTS COLLEGE STUDIES

A publication called "Tufts College Studies" has been established, as a means of presenting to the world the results of original work done in the different departments of the College. The numbers, which are issued as material is ready, are distributed to educational institutions and learned societies. The College desires to establish regular exchanges of these Studies with publishing institutions at home and abroad. Correspondence regarding exchanges should be addressed to the Librarian of Tufts College. One volume and two numbers of a second volume of the scientific series have been issued, and a single number of the English series. The editorial board of TUFTS COLLEGE STUDIES for the current year is made up of the President of the College and Professors Fay, Neal, Metcalf, and Rockwell.

ATHLETICS

The supervision of all athletic sports is vested in a Board of Directors of Athletics, consisting of nine members, three of whom are appointed from the Faculty, three from the Alumni, and three elected from the undergraduates. This board through its sub-committees controls the expenditure of all moneys, the hiring of coaches, the arranging of games, the eligibility of players, and generally seeks to raise all college sports to a level of genuine usefulness. The Director of the Gymnasium limits the candidates for college teams to those students who have shown by a physical examination that they are qualified to engage in strenuous exercise.

EXPENSES

The charge for instruction in the School of Liberal Arts is *one hundred twenty-five dollars* a year, or *five hundred dollars* for the full course whether it be completed in three, four, or more years. A registration fee of five dollars is charged to all students entering the School of Liberal Arts or the Engineering School.

The tuition fee for every student who entered the Engineering School in 1911–1912 or earlier is *one hundred and fifty dollars* a year, or *six hundred dollars* for the course. For students entering for the first time in 1912–1913 or thereafter the tuition fee is *one hundred and seventy-five dollars* a year, or *seven hundred dollars* for the course.

In the case of students admitted to advanced standing, the fees will be based upon the amount of work done under the direction of Tufts College.

No part of the fees and charges for a term is returnable to the student if he leaves during the term.

Students in the chemical laboratories are charged for breakage, and not more than *four dollars* a term for chemicals used, according to the subjects taken. A fee of *four dollars and a half* a term is required for each laboratory course in the Department of Biology, and a fee of *four dollars* a term for each laboratory course in the Departments of Geology and Mineralogy.

Half room-rent, including heat, ranges from twenty-five to eighty dollars, in the several dormitories. Students furnish their own rooms. Any special damage done by students to college property is charged in the term bills. All damage to dormitories other than normal wear is charged to the occupants. Rooms in the college halls will be open for occupancy of students on and after the Wednesday of the week preceding the opening of the college year, and will be closed on the Wednesday after Commencement. Non-resident students in all departments, except the Medical and Dental Schools, are subject to a fixed annual charge of ten dollars.

Students may obtain the use of day-rooms in the dormitories by arrangement with the Bursar, on payment of a moderate fee.

Payment of tuition, room rent, and other charges in all departments of the College is made in advance for each half-year, on or before November first and March first, but a payment of fifty dollars on the bills due November first will be required of all students on or before October first.

All college charges are payable to the Bursar, and all arrangements with regard to rooms are to be made with him. The Bursar must certify that all college charges have been met before a student can receive his degree or a letter of honorable dismissal.

The Executive Committee of the Trustees has power to order the suspension or dismissal of a student for failure to keep his bills promptly paid, or for other good and sufficient cause.

Resident students will be given free hospital treatment in cases of illness or accident, provided that the cost to the College of such treatment shall not exceed seventy-five dollars for any one person in any one year. Except in cases of emergency, doctors are to be called and hospital arrangements made through the college office.

The following estimates represent the fixed annual expenses, not including room-rent or the non-resident fee: —

	School of Liberal Arts	Engineering School
Tuition	$125.00	$175.00
Physical Education, including gymnasium and grounds, and T.C.A.A. ticket	15.00	15.00
Reading-room	1.00	1.00
Board, $4.50 a week (36 weeks)	162.00	162.00
Total	$303.00	$353.00
Registration fee, at the beginning of the course	$5.00	$5.00

Special students in the School of Liberal Arts pay the initial registration fee and $20.00 a term for each subject of three hours a week or less, together with the usual laboratory fees.

STUDENTS' DRAFTS

The College issues drafts for the use of students in books of twenty-five to fifty dollars. These are freely negotiable in the college community and are becoming so in all banks and stores in greater Boston. No commission is charged, and the holder is protected from loss or theft. The drafts are for sale at the Bursar's office and at the College Book Store.

INSURANCE

Arrangements may be made through the Bursar's office whereby students in any of the dormitories can insure their personal effects, including books, furniture, and wearing apparel. The cost of such insurance is fifty cents for one hundred dollars for one year. Insurance is placed only in multiples of one hundred dollars; no risk is taken for less than one hundred dollars, and all premiums are payable in advance.

THE DORMITORIES

East, West, Dean, Paige, and Curtis Halls are arranged with convenient rooms in suites, are warmed by steam, lighted by gas or electricity, and have good modern plumbing. These halls provide rooms for two hundred and fifty men.

REGULATIONS CONCERNING COLLEGE ROOMS

The annual assignment of rooms will take place in the month of May, at a time appointed by the Bursar, due notice being given upon the official bulletin board. Students occupying any room may retain it for the following academic year by signing a new room-agreement. All rooms not thus provided for will be offered for rent to members of the three upper classes. Rooms not assigned at the annual allotment will be open for choice to members of the entering class, in the order of application.

The right to occupy a college room is given only to the student or students to whom it is assigned: neither exchanges nor transfers of rooms are allowed, except by consent of the Bursar. Room agreements are made for the college year.

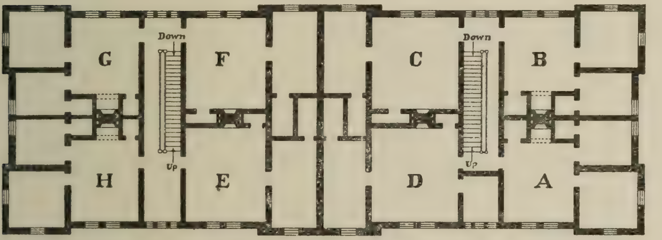
All rooms are for two students, except East 3, 12, 19, 22, 27, and 32, West 16½, and Curtis 4 and 12, and all rooms in Paige, which are for a single student each. Where more than two students occupy a room, the rent will be increased proportionately.

Each student receives his key on payment of fifty cents, which is refunded on the return of the key at the close of the college year.

The prices given for room rent in the lists below are for the whole room during the academic year, and include heat and care. The rooms are lighted with gas; Paige Hall has electricity also. Each suite is metered separately, and the occupants pay for the gas actually consumed. None of the rooms is furnished.

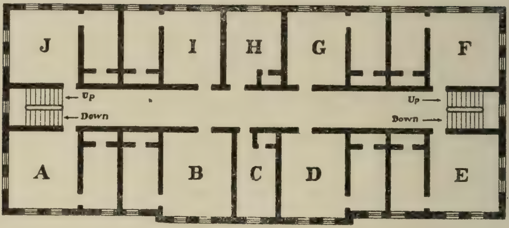
Room rent is in accordance with the following diagrams and prices:—

WEST HALL



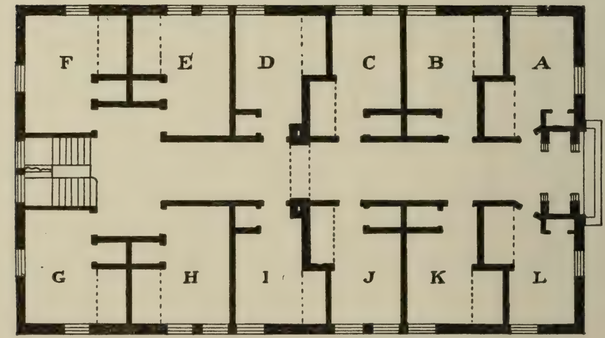
FIRST FLOOR	SECOND FLOOR	THIRD FLOOR	FOURTH FLOOR
A 1 . . $128	A 5 . . $160	A 9 . . $140	A 13 . . $96
B 2 . . 102	B 6 . . 128	B 10 . . 118	B 14 . . 80
C 3 . . 92	C 7 . . 100	C 11 . . 96	C 15 . . 74
D 4 . . 128	D 8 . . 150	D 12 . . 140	D 16 . . 96
E 17 . . 128	E 21 . . 150	E 25 . . 140	E 29 . . 96
F 18 . . 92	F 22 . . 100	F 26 . . 96	F 30 . . 74
G 19 . . 102	G 23 . . 128	G 27 . . 118	G 31 . . 80
H 20 . . 128	H 24 . . 160	H 28 . . 140	H 32 . . 96

EAST HALL



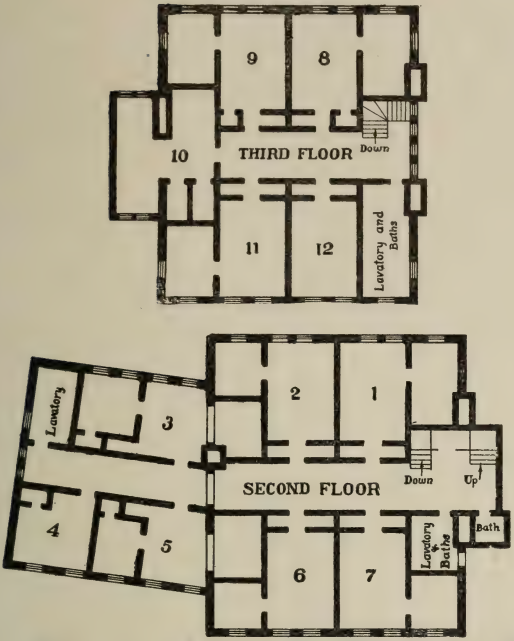
BASEMENT	FIRST FLOOR	SECOND FLOOR	THIRD FLOOR
A	A 6 . . $96	A 15 . . $110	A 25 . . $102
B	B 7 . . 92	B 16 . . 110	B 26 . . 100
C	C	C 17 . . 43	C 27 . . 40
D	D 8 . . 92	D 18 . . 110	D 28 . . 100
E	E 9 . . 100	E 19 . . 118	E 29 . . 110
F 1 . . $60	F 10 . . 100	F 20 . . 110	F 30 . . 100
G 2 . . 55	G 11 . . 80	G 21 . . 86	G 31 . . 80
H 3 . . 30	H 12 . . 40	H 22 . . 43	H 32 . . 40
I 4 . . 55	I 13 . . 80	I 23 . . 86	I 33 . . 80
J 5 . . 60	J 14 . . 86	J 24 . . 90	J 34 . . 86

PAIGE HALL



In Paige Hall the plan of each floor is the same. From A to L, the rooms are numbered from 1 to 12 on the first floor; from 13 to 24 on the second, and from 25 to 36 on the third floor. The price for each room is $75.

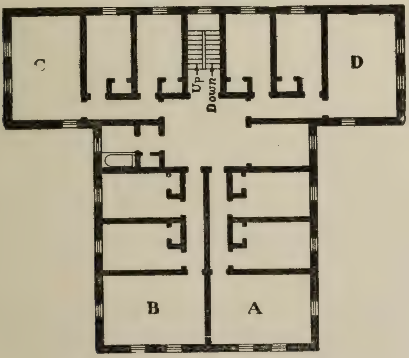
CURTIS HALL



1 . . $80	4 . . $ 50	7 . . $85	10 . . $85
2 . . 80	5 . . 100	8 . . 85	11 . . 85
3 . . 90	6 . . 85	9 . . 85	12 . . 45

Nos. 4 and 12 are single rooms.

DEAN HALL



DEAN HALL

(See previous page for plan)

FIRST FLOOR		SECOND FLOOR		THIRD FLOOR		BASEMENT	
A 1	$160	A 5	$160	A 9	$160	A 13	$85
B 2	160	B 6	160	B 10	160	B 14	85
C 3	160	C 7	160	C 11	160	C	
D 4	160	D 8	160	D 12	160	D	

SCHOLARSHIPS

Awards of scholarships are made by the Board of Trustees, on the recommendation of the Faculty. Applications for scholarships must be filed with the Registrar on blanks furnished for the purpose, on or before the first day of October; and, if the applicant be a minor, must be sanctioned by his parent or guardian. Grants of aid will apply only for the year in which granted, and will not in themselves be ground for continuance of assistance. If scholarship aid is desired during the following year, a new application must be filed.

All students desiring scholarships will be requested to file answers to specific questions on a blank provided for this purpose. In the case of a new student this blank must be accompanied by a letter from the principal of the school last attended, containing a statement as to the applicant's character and especially as to his standing as a student. In order to enable students to make financial plans for their first year these papers may be filed during the summer vacation, and the applicant may, if there appears to be real need and good ability, receive assurance of aid for the first half of the Freshman year.

After the first half of the Freshman year, continuance of aid will depend upon the student's need and the grade of his work. Students are required to attain for graduation a grade of at least C in a certain proportion of their work. No student is considered eligible for scholarship aid who has, in the preceding year or term, failed to meet this requirement.

The following conditions must be strictly observed by the applicant:

(*a*) His expenditure must be moderate, and strictly in accordance with his declaration of limited means.

(*b*) He must be regular in attendance.

(*c*) He must be guilty of no behavior reflecting upon his moral character or subversive of good order in the College.

Applicants residing in college dormitories will be given preference over those residing at home.

Scholarships are available for those students only whose term bills are fully paid within ten days after such bills shall have become due.

The following scholarships have been founded in the College. Except in special cases, when the donor has otherwise stipulated, the Trustees will award scholarship aid in such sums as they may determine in each case.

THREE STATE SCHOLARSHIPS.—Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS.—Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS.—Established in honor of the late William J. Walker, M.D., of Newport, R. I., and payable from the income of the Walker Fund.

TWO MOSES DAY SCHOLARSHIPS.—Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP.—Founded by the late Alonzo Ames Miner, D.D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP.—Founded by the late Charles Robinson, LL.D., of Newton.

THE WILLIAM OSCAR CORNELL SCHOLARSHIP.—Founded by the late William Oscar Cornell, of Providence, R. I.

THE LAURA A. SCOTT SCHOLARSHIP.—Founded by Mrs. Laura A. Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP.—Founded by the late Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP.—Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP.—Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP.—Founded by Mrs. Emma R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP.—Founded by the late Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP.—Founded by the late Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP.—Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram H., Augustus, and Frank Simons.

THE AMASA AND HANNAH L. WHITING SCHOLARSHIP.—Founded by the late Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP.—Founded by the late Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP.—Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP.—Founded by the late Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP.—Founded by the late John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP.—Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP.—Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP.—Founded by the late Henry Rollins, of Bangor, Me.

THE J. H. MORLEY MEMORIAL SCHOLARSHIP.—Founded by Herbert Small Morley, of Templeton.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP.—Founded by friends of the late Edwin Hubbell Chapin, D.D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP.—Founded by the late Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU, 2D, MEMORIAL SCHOLARSHIP.—Founded by the late Mrs. Mary T. Goddard, of Newton.

THE HENRY E. COBB SCHOLARSHIP.—Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP.—Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP.—Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE JOSEPH D. PEIRCE MEMORIAL SCHOLARSHIP.—Founded by the children and other relatives of the late J. D. Peirce, D.D., of Attleboro.

TWO SIMMONS SCHOLARSHIPS.—Founded by the late Robert F. Simmons, of Attleboro, in the name of Mary F. and Robert F. Simmons.

THE JOSHUA S. AND HARRIET N. WHITE SCHOLARSHIP.—Founded by the late Joshua S. White, of Pawtucket, R. I.

THE JOHN B. PERKINS SCHOLARSHIP.—Founded by the late Ann Maria Perkins, of Medford.

THREE BARNARD SCHOLARSHIPS.—Founded by the late Mrs. Caroline M. Barnard, of Everett.

THE RICHARD PERRY BUSH SCHOLARSHIP.—Founded by the late Mrs. Caroline M. Barnard, of Everett.

THE BARTLETT SCHOLARSHIP.—Founded by the late Mrs. Nancy Bartlett, of Milford.

THE B. H. DAVIS SCHOLARSHIP.—Founded by the Rev. B. H. Davis, of Weymouth, for the benefit of students of the College of Letters who are preparing to enter the Christian ministry.

THE LATIMER W. BALLOU SCHOLARSHIP.—Founded by the late Latimer W. Ballou, of Woonsocket, R. I.

THE NATHANIEL WHITE SCHOLARSHIP.—Founded by Armenia S. White, of Concord, N. H.

THE LIZZIE P. ALLEN SCHOLARSHIP.—Founded by the late Lizzie P. Allen, of Derby Line, Vermont.

THE RHODE ISLAND SCHOLARSHIP.—Founded by several persons in Rhode Island.

TWO CHARLES AND FANNIE A. MINER BOOTH SCHOLARSHIPS.—Founded by the late Charles Booth, of Springfield, Vermont.

THE LUTHER GILBERT SCHOLARSHIP.—Founded by the late Mrs. Luther Gilbert, of Roxbury.

THE ORMSBEE CLASS SCHOLARSHIP.—Founded by Benjamin F. Smith, of Pawtucket, R. I.

THE JAMES M. AND EMILY COOK SCHOLARSHIP.—Founded by Henrietta J. States, of Boston.

THE WILLIAM H. SHERMAN SCHOLARSHIP.—Founded by the late William H. Sherman, of Cambridge.

THE DAVIS COOK SCHOLARSHIP.—Founded by the late Davis Cook, of Cumberland, R. I.

THE AUSTIN B. FLETCHER SCHOLARSHIP.—Founded by Austin Barclay Fletcher, of New York City.

THE JONAS CLARK WELLINGTON SCHOLARSHIP.—Founded by Mrs. Sarah C. Fisher Wellington, of Cambridge.

THE MARY L. GROCE SCHOLARSHIP.—Founded by the late Mary L. Groce, of Roxbury.

THE JOHN MURRAY SPRAGUE AND ELIZA FLETCHER SPRAGUE SCHOLARSHIP.—Founded by the late John Sprague, of Lowell.

THE MARY A. RICHARDSON SCHOLARSHIP.—Founded by the late Mrs. Mary A. Richardson, of Worcester.

TWO WARREN SCHOLARSHIPS.—Founded by the late Dr. Ira Warren, of Boston.

TRUSTEE SCHOLARSHIPS.—A limited number of special scholarships of one hundred dollars each are available for needy students in the School of Liberal Arts who reside in college dormitories.

The following scholarships of fifty dollars each are awarded annually:—

THE A. A. MINER SCHOLARSHIP.—Founded by the late Alonzo Ames Miner, D.D., of Boston.

THE PERKINS SCHOLARSHIP.—Founded by the late James D. Perkins, of New Rochelle, N. Y.

THE MOSES DAY SCHOLARSHIP.—Founded by the late Moses Day, of Roxbury.

THE JOSEPH H. WALKER SCHOLARSHIP.—Founded by the late Joseph H. Walker, of Worcester.

THE GEORGE C. THOMAS SCHOLARSHIP.—Founded by George C. Thomas, of Philadelphia, Pa.

THE ALBERT W. SAYLES SCHOLARSHIP.—Founded by the late Albert W. Sayles, of Lowell.

THE LIZZIE P. ALLEN SCHOLARSHIP.—Founded by the late Lizzie P. Allen, of Derby Line, Vermont.

THE CHARLES A. AND CORNELIA B. SKINNER SCHOLARSHIP.—Founded by the late Rev. Charles A. Skinner, D.D., and Mrs. Cornelia B. Skinner, of Cambridge, Mass.

THE GEORGE STEVENS BALLARD SCHOLARSHIP.— Founded by the late Caroline D. M. Ballard, of Augusta, Me.

The following scholarships are awarded under special conditions:—

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY.—Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with at least a fair degree of attainment, the greatest improvement in Oratory.

THE WENDELL PHILLIPS MEMORIAL SCHOLARSHIP.—Founded to perpetuate the name, fame, and influence of Wendell Phillips. This scholarship is to be awarded to a student who has completed the Freshman and Sophomore years, and he is to have the benefit of it during the remainder of his course. The beneficiary must be of sound body, high character, and ability in declamation and debate, and must comply with certain special conditions, including participation in a competitive debate of the applicants at the end of the Sophomore year. The specific conditions governing the award of this scholarship may be obtained by those intending to apply therefor from the Secretary of the Faculty, to whom application should be made early in the Sophomore year. The income of this scholarship is at present seventy dollars.

THE MOSES TRUE BROWN SCHOLARSHIP.—A scholarship yielding fifty dollars annually, founded by the late Moses True Brown, of Sandusky, Ohio, formerly Professor of Oratory in Tufts College, for encouraging and assisting worthy students in the department of Oratory.

THE PRIZE SCHOLARSHIP OF THE CLASS OF 1898.—The sum of fifty dollars is given annually by the Class of 1898 to that Senior who at the end of the Junior year shall have maintained the highest excellence in a course of study broadly and wisely chosen.

THE PRIZE SCHOLARSHIP OF THE CLASS OF 1882. — The sum of one hundred dollars is given annually by the class of 1882 to that member of the College who best exemplifies the combination of ability in athletics and excellence in scholarship.

PRIZES

GODDARD PRIZES.— Three prizes of fifteen dollars each are assigned annually from the Goddard Prize Fund. In 1913–14 these prizes will be awarded in the departments of Biology English, and Philosophy, under the following conditions:

GERMAN.—A prize for the best examination on the dramatic works and theories of Lessing, by a member of the Junior or Senior class. The preparatory study will call for the reading, in addition to the plays covered in class, of Lessing's earlier dramas and assigned chapters of his "Hamburgische Dramaturgie."

HISTORY AND PUBLIC LAW.—A prize for the best thesis by a student in History and Public Law on a subject to be approved by the head of the department. Theses prepared for courses will be accepted in competition.

PHYSICS.—A prize awarded to that student in 31-1 or 24-21 who shows the greatest improvement during the course.

RHETORICAL PRIZES.—Three prizes are awarded as follows :—

A first prize of forty dollars, a second prize of thirty dollars, and a third prize of twenty dollars. The preliminary competition will be open to all candidates for the degree of A.B., B.S., and B.D.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Instructor in Oratory. A preliminary competition is held about ten days before the competition announced in the calendar, at which a committee of the Faculty determine the contestants in the final and public readings.

THE DE WITT C. TOMLINSON PRIZE SCHOLARSHIPS.—Founded by Rev. Irving C. Tomlinson, of Brookline, Mass.

Two prizes of thirty and twenty dollars respectively, for the two best essays on the subject of "The Ministry of Christ Jesus." The award of prizes must take into account (1) literary merit; (2) evidence of thorough study, clear insight, and unbïased understanding of the Biblical records of the ministry of Christ Jesus; (3) the treatment of the public and private ministration to those of his own time; (4) the treatment of the universal application of his ministry to all human needs, and (5) the treatment of the means by which the benefits of his ministry may be appropriated by his followers.

These prizes are open to Seniors in The School of Liberal Arts, the Engineering School, the Theological School, and Jackson College, and to members of the Graduate School. Details as to conditions of competition may be obtained at the Secretary's office.

The foregoing prizes are not awarded, unless in the opinion of the respective judges there is sufficient merit in the several contests to warrant their distribution.

A regular day has been appointed for the annual announcement of the award of prizes and the assignment of Commencement parts,— Wednesday of the week preceding the Thanksgiving recess.

COMMITTEE ON STUDENT EMPLOYMENT

It is the object of the committee on student employment to inform students concerning positions which may give regular occupation during available hours of term time, or which may be temporarily filled during the vacation periods. Students who wish to make application for any occupation should register their names, with a statement of their qualifications for any special work, with DEAN WREN, Chairman of the Employment Committee, Ballou Hall.

Buildings and Equipment

The College buildings are twenty in number. Ballou Hall contains recitation-rooms, and the offices of the President, the Dean, the Registrar, and the Bursar. Other buildings are Barnum Museum; Goddard Chapel; Miner Hall; Goddard Gymnasium; the Eaton Library; the Chemical Building; Jackson Gymnasium; three dormitories,—East Hall, West Hall, Dean Hall, for men; Curtis Hall, containing the post-office, class-rooms, and rooms for students; Metcalf Hall, and Start and Richardson Houses, for students of Jackson College. The Bromfield-Pearson School building is available for technical courses of the College. Two buildings, Packard Hall and Paige Hall, are devoted to the use of the Theological School. Robinson Hall provides for work in certain of the physical sciences. A power-house has been added, which supplies light, heat, and power to the engineering buildings.

EATON MEMORIAL LIBRARY

The new library building, erected through the gift of one hundred thousand dollars by Mr. Andrew Carnegie, is called the Eaton Memorial Library, in honor of the late Charles Henry Eaton, '74, former pastor of the Church of the Divine Paternity, New York City.

In all, about seventy thousand bound volumes and fifty-seven thousand pamphlets are available for use. The College regularly receives more than two hundred periodicals. By favor of the late Senator Hoar the library is a depository for government publications. In the library building a reading-room, maintained by the students, supplies the daily and weekly papers. The student fund also provides a number of the popular and the more technical magazines. Separate rooms have been provided with facilities for the use of students working in the departments of History and Public Law, the Ancient Languages, the Modern Languages, Music, English, the Fine Arts, Philosophy, Political Science, Physics and Mathematics. The average annual increase by donation and purchase, for the last five years, has been about two thousand four hundred volumes.

In the general library is the collection of the Universalist Historical Society (six thousand volumes and several thousand pamphlets), to which, on application, students have free access. In Packard Hall is a selected reference library, for the use of theological students. In the Barnum Museum is the department library of Natural History, numbering more than thirty-three hundred volumes and over eight thousand pamphlets. The Metcalf Musical Library is divided between the music rooms in Goddard Gymnasium, where the scores are kept, and the department room in the Eaton Memorial Library, which contains the collection of English works relating to music. About four hundred representative musical compositions, in form for use upon the automatic instruments in the music rooms, are available to students.

The library is open to all members of the College daily except Sundays and holidays, from 8.00 A.M. to 5.30 P.M.

BARNUM MUSEUM

The Barnum Museum of Natural History was built in 1883–84 by the late Phineas T. Barnum, who gave the College a fund for its maintenance and for the addition of two wings to the central building. One of these wings has been erected. In addition to laboratory rooms, it affords space for the display of the mineralogical and geological collections.

The College is also indebted to Mr. Barnum for the larger portion of its zoological collection. This serves to illustrate all groups of the animal kingdom, and is especially rich in skeletons and mounted skins of mammals, the whole being well adapted for the purposes of instruction. The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the southern and western States. The geological collection contains representatives of the various types of rocks, as well as of fossils from all formations. The mineralogical collection embraces fine examples of most of the species.

The laboratories and lecture-rooms of the department of Geology are in the main Museum building. The geological laboratory is provided with petrological microscopes, instruments for making rock sections, and other instruments. The mineralogical laboratory possesses the apparatus necessary for the determination of minerals, the analysis of ores, and assay work. The biological laboratories are in the main building and in the newly-erected wing. The laboratories for elementary work are furnished with all necessary facilities, while the laboratory for advanced and research work has all the appliances needed for investigation on the lines of anatomy, histology, and embryology.

The Barnum Museum is open for the inspection of visitors from 8.30 A.M., to 5.00 P.M., every day except Sundays and legal holidays.

GODDARD GYMNASIUM

Goddard Gymnasium, the gift of Mrs. Mary T. Goddard, is well adapted to provide the prescribed class and individual work, and to furnish wholesome physical exercise for all. It is fitted with the apparatus usually seen in a good modern gymnasium, including facilities for light and heavy gymnastics, fencing, wrestling, basket ball, base ball, and the many indoor athletic sports. In the offices is a full set of anthropometric instruments for the physical examination of all students. There is a large gallery, with padded running track twenty-four laps to the mile. The dressing rooms, lockers, and baths are well lighted and commodious. The building is heated by steam and lighted by electricity.

The third floor is occupied by the department of Music.

ATHLETIC FIELDS

The old campus is just outside the gymnasium, and on it are tennis-courts, base-ball diamonds, a foot-ball field, and a board track. Its close proximity to the Gymnasium is of great advantage.

Tufts College Athletic Field is the large inclosed field on

College Avenue, where inter-collegiate contests are played. It includes two base-ball diamonds, a foot-ball field, and a quarter-mile, twenty-foot cinder track, for track athletics. Tennis-courts and a separate gymnasium are provided for women students, not far from Metcalf Hall.

While athletics are encouraged and generously supported by the College, they are made subsidiary to the requirements of the curriculum, thus safeguarding the best interests of the student.

CHEMICAL BUILDING

The building of the department of Chemistry contains laboratories for general inorganic, organic, analytical, and metallurgical chemistry, a large lecture-room, library, and weighing room, and the private laboratories of the professors in charge. The rooms are provided with modern laboratory conveniences, and are well supplied with apparatus and chemicals.

ROBINSON HALL

Robinson Hall is a memorial to the late Charles Robinson, and is designed for the use of the Engineering School. It contains the laboratories for the Departments of Physics and Electricity and some of the laboratory equipment for the Departments of Civil and Mechanical Engineering. Beside these laboratories there are recitation rooms, a lecture hall and offices for the instructors. The drafting rooms for the Civil and Structural Departments are also in this building. It is well lighted by electricity, and heated from an adjoining steam plant by direct and indirect methods.

BROMFIELD-PEARSON BUILDING

The Bromfield-Pearson Building is largely used by the Department of Drawing and Mechanic Arts. It contains the office of the Dean together with the library and offices of the Department of Mechanical Engineering. Abundant and uniform light is provided, and the drafting rooms are separated from the noise and confusion of the shops. One end of the building is used exclusively by the pattern and machine shops, and both are well equipped with modern tools and facilities for conducting the class work in mechanic arts. Electricity from the college plant is used for lighting and power throughout the building.

THE POWER STATION

The Power Station is equipped with a one hundred and twenty-five horse-power boiler, which supplies heat and power to the engineering buildings. It is also piped and equipped for experimental work in steam engineering, and may be run by forced or natural draft. A Harrisburg Standard engine directly coupled to a direct current General Electric generator furnishes current for lighting, power, and experimental purposes.

LABORATORIES

The engineering laboratories that are located in Robinson Hall and the Power Station are well equipped for the experimental work prescribed in the curriculum.

The Civil Engineering Laboratories contain the Cement and Highway testing apparatus including abrasion machines for paving material and the necessary instruments and machines for testing cement and highway materials. The Hydraulic Laboratory is equipped with a 600 gallon Worthington duplex steam pump, a 300 gallon Lawrence centrifugal pump, steam pulsometer, Pelton water wheel and a Gould hydraulic ram. A 4500 gallon channel serves for supply and discharge from the several pumps and contains a rectangular and a triangular weir, together with the necessary apparatus, meters, gauges, etc., for the measurement of water. The surveying apparatus consists of nine transits, six of which are fully equipped and two are adapted to precise triangulation; seven engineers' levels representing various types and makes; three plane table outfits; sextants, hand levels, compasses, and a full complement of the usual auxiliary apparatus.

The Electrical Laboratories are well equipped for electrical testing. Alternating current power is obtained from the circuits of the Edison Electric Illuminating Co., both three phase and single phase being used. The direct current power is obtained from the Tufts College power plant which contains both generators and a storage battery. The apparatus includes a great variety of portable instruments for the measurement of electro-motive force, current and power, together with numerous generators, motors, transformers and accessories for experimental work. A standard wattmeter, potentiometer, and Weston Laboratory Standard meters provide convenient means for checking the accuracy of the portable instruments. Connected with the laboratories is a photometer room with suitable equipment for measurements on standard types of lamp. A General Electric University Alternator, single and polyphase induction motors, transformers of various capacities, and other apparatus both standard and special are to be found in the dynamo laboratory. A number of the direct current dynamos specially adapted to experimental purposes have been designed and constructed by the students in the shops of the institution.

The Mechanical Engineering Laboratory equipment includes a Corliss engine with Admiralty condenser, a 15 Kilowatt Curtiss steam turbine and a variety of smaller engines, stationary and marine, of the plain slide valve, piston valve and riding cutoff valve types. There are gas and gasoline engines of from one to four cylinders representing a variety of makes. An automobile and motorcycle testing plant is also included in the equipment. Absorption and brake dynamometers are used for the measurement of power and other machines are provided for oil testing, compressed air and fan tests. The equipment includes a good assortment of indicators, calorimeters, gauges, etc., for the variety of measurement required in a power engineering laboratory.

An extension to this building provides accommodation for the forge shop and such of the equipment of the Mechanical Engineering Department as cannot be accommodated in Robinson Hall.

SCHOOL OF LIBERAL ARTS

Faculty

WILLIAM L. HOOPER, A.M., PH.D., ACTING PRESIDENT

FRANK G. WREN, A.M., DEAN
Walker Professor of Mathematics

WILLIAM H. REED, JR., A.M., SECRETARY
Assistant Professor of Modern Languages

EDWIN C. BOLLES, PH.D., D.D., LL.D.
Dickson Professor of English and American History

CHARLES E. FAY, A.M., LITT.D.
Wade Professor of Modern Languages

WILLIAM G. TOUSEY, A.M., S.T.D.
Professor of Logic and Ethics

RICHARD JONES, PH.D.
Professor of English Literature

ALFRED C. LANE, A.M., PH.D., SC.D.
Pearson Professor of Geology and Mineralogy

EUGENE H. BABBITT, A.B.
Assistant Professor of Modern Languages

LEO R. LEWIS, A.M.
Professor of the History and Theory of Music

FRANK W. DURKEE, A.M.
Professor of Chemistry

HERBERT V. NEAL, PH.D.
Professor of Zoology

WILLIAM K. DENISON, A.M.
Professor of the Latin Language and Literature

FRED D. LAMBERT, A.M., PH.D.
Professor of Botany

HENRY C. METCALF, PH.D.
Jackson Professor of Political Science

CHARLES ST. CLAIR WADE, A.M.*
Professor of the Greek Language and Literature

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*Absent on leave.

WILLIAM R. RANSOM, A.M.
Professor of Mathematics

ALBERT H. GILMER, A.M.
Assistant Professor of English

KARL SCHMIDT, A.M., PH.D.
Professor of Philosophy

ARTHUR I. ANDREWS, PH.D.
Professor of History

PHILIP H. COBB, PH.D.
Assistant Professor of Physical and Organic Chemistry

*PHILIP M. HAYDEN, A.B.
Professor of French

HENRY H. MARVIN, PH.D.
Assistant Professor of Physics

MELVILLE D. LIMING, A.M.
Instructor in Political Science

FRANK W. POTE, B.S.
Instructor in Physics

ALEXANDER DILLINGHAM, A.M
Assistant Professor of Mathematics

NATHANIEL H. KNIGHT, B.S.
Instructor in Physics

CROSBY F. BAKER, M.S.
Instructor in Chemistry

ELLSWORTH S. KRANTZ, B.P.E.
Instructor in Physical Education

Standing Committees

PROMOTIONS: Dean Wren, *Chairman;* Professors Durkee, Andrews, Denison, and Reed.

CURRICULUM: Dean Wren, *Chairman;* Professors Fay, Denison, Metcalf, and Durkee.

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* Absent on leave.

Requirements for Graduation

Students may enter upon their work in the courses of liberal arts as candidates for the degree of Bachelor of Arts, or Bachelor of Science. In every case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Students determine the general direction of their work by their choice of course. They are thereby brought into personal advisory relations with their respective major instructors, under whose guidance they arrange their programs with reference to their individual needs and aims. All work actually accomplished by the student in regular standing counts toward the attainment of the degree.

SYNOPSIS OF THE REQUIREMENTS FOR GRADUATION*

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Science is the satisfactory completion of subjects aggregating one hundred and twenty-two term hours, including physical education.†

(2) Students are required to attain for graduation a grade of at least C in seventy-two term hours.‡

(3) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student will be granted a degree in less than four years of residence, unless he shall have obtained grade B as an average for his entire work.

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* Each department offers a series of subjects for study. The unit indicating the requirements is the *term hour*, which represents a subject pursued one hour a week for one half-year. Thus a subject calling for three hours a week for one term represents a requirement of three term hours; if it calls for three hours a week for one year, or two terms, the requirement in that subject is six term hours.

†An acceptable Commencement part counts as an elective in the second half of the Senior year.

‡ For the meaning of grade C, see "Grades of Scholarship" under "General Information."

Courses of Instruction

The courses offered are as follows:

I. A general course, largely elective, leading to the degree of Bachelor of Arts.

II. Courses in Biology, Physics, and Chemistry, largely prescribed, leading to the degree of Bachelor of Science.

III. Eight courses arranged for students proposing to prepare for advanced study in certain lines, or to enter upon certain occupations. These courses lead to the degree of Bachelor of Arts for students who present an advanced ancient language for admission, and who choose their electives so as to fulfil the requirements for that degree; others satisfactorily completing any one of these courses receive the degree of Bachelor of Science.

I. GENERAL COURSE LEADING TO THE DEGREE OF BACHELOR OF ARTS

The plan of study aims to furnish, in its prescribed subjects, the essentials of a liberal education, and at the same time a large opportunity for election.

The following subjects are prescribed: —

	Term Hours
Languages (Latin, Greek, French, German: each student to take *three*)	18
English	6
Mathematics	6
Physical Science (Physics, Chemistry, Biology: each student to take *one, or two*)	12
Mental and Moral Science (of the three departments, Philosophy, Political Science, and History and Public Law, each student must take work in *at least two*)	12
Physical Education	2
A total of	56

The requirements are by groups, not by special subjects, and in each group except English and Physical Education some choice is allowed the student.

A normal Freshman program includes English, Mathematics, an ancient language, a second foreign language, and a physical science, together with Physical Education. All Freshman programs are subject to the approval of the Committee on Promotions.

At the end of the first year the student is required to choose a major department in which he must complete, before graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the prescribed groups as a part of the eighteen hours which he is required to give to his major department, but no subject indicated in the catalogue as elementary can be counted in such work.

The student shall further complete eighteen term hours in subjects approved as collateral with his major subject; that is, subjects tending to strengthen and to assist his work in his major.

The remaining term hours of the required aggregate are to be made up by the election of the student from the various subjects offered, limited only by special restrictions applied to certain subjects.

II. COURSES IN BIOLOGY, PHYSICS AND CHEMISTRY

BIOLOGY

The course in Biology is designed to prepare students for positions as teachers of Science in the secondary schools, or for graduate work in Biology.

FRESHMAN YEAR

First Term		Second Term	
English 1	3	English 2	3
Mathematics 3	3	Mathematics 1	3
German or French	3	German or French	3
Physics 1	3	Physics 1	3
Chemistry 1	3	Chemistry 1	3

SOPHOMORE YEAR

First Term		Second Term	
Biology 1	3	Biology 1	3
Chemistry 35-2	2	Chemistry 35-3	2
Physics 21	2	Physics 21	2
Physics Laboratory 24-7	1	Physics Laboratory 24-7	1
French or German	3	French or German	3
Electives		*Electives*	
English		English	
Mathematics		Mathematics	

JUNIOR YEAR

FIRST TERM		SECOND TERM	
Biology 3	3	Biology 3	3
Chemistry 4	3	Chemistry 4	3
Geology 21	1	Geology 23	1
Geology 22	2	Geology 24	2
Political Science 1 or History 1	3	Political Science 1 or History 1	3
Electives		*Electives*	
Physics		Physics	
Chemistry		Chemistry	
Biology		Biology	
Mathematics		Mathematics	
Modern Language		Modern Language	
Philosophy 55		Philosophy 55	

SENIOR YEAR

FIRST TERM		SECOND TERM	
Biology 7	3	Biology 7	3
Chemistry 35-10	4	Chemistry 35-10	4
History 1 or Political Science 1	3	History 1 or Political Science 1	3
Electives		*Electives*	
Physics		Physics	
Chemistry		Chemistry	
Biology		Biology	
History or Political Science		History or Political Science	
Modern Language		Modern Language	
Philosophy 55		Philosophy 55	

PHYSICS

The course in Physics is intended to prepare students for positions as teachers of Physics, or for positions as assistants in Government or commercial laboratories. The course may be followed by those who wish to do graduate work in Physics.

FRESHMAN YEAR

FIRST TERM		SECOND TERM	
English 1	3	English 2	3
Mathematics 3	3	Mathematics 1	3
German or French	3	German or French	3
Physics 1	3	Physics 1	3
Chemistry 1	3	Chemistry 1	3

SOPHOMORE YEAR

FIRST TERM		SECOND TERM	
German or French	3	German or French	3
Mathematics 4	3	Mathematics 5	3
Chemistry 35-2	2	Chemistry 35-3	2
Physics 21	2	Physics 21	2
Physics Laboratory 24-7	1	Physics Laboratory 24-7	1
Electives		*Electives*	
English		English	
Drawing 21-1		Modern Language	
Modern Language		Biology	
Biology			

JUNIOR YEAR

FIRST TERM		SECOND TERM	
Mathematics 6	3	Mathematics 10	3
Chemistry 4	3	Physics 6, or 9	3
History 1, or Political Science 1	3	Chemistry 4	3
Physics 2	3	History 1, or Political Science 1	3
Electives		*Electives*	
Mathematics 9		Mathematics 7	
Physics Laboratory 17		Physics Laboratory 17	
Mineralogy 1		Mineralogy 2	
Biology		Biology	

SENIOR YEAR

First Term		Second Term	
Mathematics 14, or Physics 11	3	Physics 9, or 6	3
Chemistry 11	3	Chemistry 11	3
Political Science 1, or History 1	3	Political Science 1, or History 1	3
Electives		*Electives*	
Mathematics 12		Mathematics 14	
Physics Laboratory 17		Physics Laboratory 17	
Electrical Engineering 61-3		Electrical Engineering 61-10	
Chemistry		Chemistry	
Biology		Biology	

CHEMISTRY

Students who wish to specialize in Chemistry are advised to take the B.S. course in Chemistry. The subjects have been selected and arranged to prepare students for positions in metallurgical laboratories, as chemists with manufacturers or in analytical laboratories, or as assistant chemists for immediate service in the various departments of the United States government. It may also be followed by those who wish to teach or to do graduate work in Chemistry.

FRESHMAN YEAR

First Term		Second Term	
English 1	3	English 2	3
Mathematics 3	3	Mathematics 1 or 2	3
Physics 1	3	Physics 1	3
German	3	German	3
Chemistry 1	3	Chemistry 1	3

SOPHOMORE YEAR

First Term		Second Term	
German	3	German	3
Chemistry 35-2	2	Chemistry 35-3	2
Chemistry 4	3	Chemistry 4	3
Physics 21	2	Physics 21	2
Physics Laboratory 24-7	1	Physics Laboratory 24-7	1
Electives		*Electives*	
Mathematics		Mathematics	
English		English	
Biology		Biology	

JUNIOR YEAR

First Term		Second Term	
Chemistry 5	3	Chemistry 5	3
Chemistry 9	1	Chemistry 7	2
Chemistry 35-10	4	Chemistry 35-10	4
Political Science 1	3	Political Science 1	3
Mineralogy 1	3		
Electives		*Electives*	
German		German	
English		English	
Mathematics		Mathematics	
History 1		History 1	
Biology		Biology	
		Crystallography	

SENIOR YEAR

First Term		Second Term	
Chemistry 11	3	Chemistry 11	3
Chemistry 17	3	Chemistry 17	3
Thesis	3	Thesis	3
Geology 21	1	Geology 23	1
Geology 22	2	Geology 24	2
		Chemistry 8	2
Electives		*Electives*	
Biology		Biology	
Chemistry 12		Chemistry 12	
Political Science		Political Science	
Dynamo-Electric Machinery			

III. SPECIALIZED COURSES LEADING TO THE DEGREE OF BACHELOR OF ARTS OR BACHELOR OF SCIENCE

The following courses have been arranged for students who desire to begin preparation for a definite vocation. They are designed to give at the same time as much of the general training which every educated man should have as is consistent with their special purpose, and are intended to be followed by more definitely specialized training in a graduate school or in practical experience. Those who have presented an advanced ancient language for admission and choose their electives so as to fulfil the requirements of the A.B. degree, will receive that degree. Others satisfactorily completing the subjects indicated in one of these courses will receive the degree of B.S. The studies of the Freshman year are alike for all courses, so that a definite choice need not usually be made before the end of the first year.

FRESHMAN YEAR

[Alike for all the following courses]

First Term		Second Term	
English 1	3	English 2	3
Mathematics 3	3	Mathematics 1 or 2	3
Natural Science	3	Natural Science	3
Two Foreign Languages, ancient or modern	6	Two Foreign Languages, ancient or modern	6

Note: Students intending to enter the Medical Preparatory Course should take Chemistry 1 as the Natural Science in this year.

Business

The need of systematic training of students contemplating a business career arises from the differentiation, specialization, and increasing complexity of modern business relations. This course is in no sense intended as a substitute for experience; but it should impart organized knowledge, broaden the outlook, and train the student to analyze and to appreciate new situations as they arise.

SOPHOMORE YEAR

First Term		Second Term	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Natural Science	3	Natural Science	3
History 1	3	History 1	3
Political Science 1	3	Political Science 1	3
Elective	3	Elective	3

JUNIOR YEAR

First Term		Second Term	
Political Science 2 or 4	3	Political Science 13	3
Political Science 6	3	Political Science 16 or 5	3
Philosophy 3	3	Philosophy 4	3
Law 1 or 5	3	Elective	6
Elective	3		

SENIOR YEAR

First Term		Second Term	
Political Science 17	3	Political Science 17	3
Philosophy 55	3	Philosophy 55	9
Law 5 or 1	3	Elective	3
Elective	6		

DIPLOMATIC AND CONSULAR SERVICE

For all except the highest posts in the diplomatic and consular service, appointees are now required to prove their fitness by examination. The following course, which emphasizes the study of Language, History, and Public Law, is designed to meet the requirements prescribed by the Department of State.

SOPHOMORE YEAR

First Term		Second Term	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Natural Science	3	Natural Science	3
History 1	3	History 1	3
Political Science 1	3	Political Science 1	3
Elective	3	Elective	3

JUNIOR YEAR

First Term		Second Term	
History 19 (or alternate)	3	History 20 (or alternate)	3
Law 1 (or alternate)	3	Law 3 (or alternate)	3
Philosophy 3 or Political Science 2	3	French 3B or German 3B	3
French 3B or German 3B	3	Elective	6
Elective	3		

SENIOR YEAR

First Term		Second Term	
History 4 or 6	3	History 7 or 8	3
Political Science or Philosophy 3	3	Law 9 (or alternate)	3
Law 5 (or alternate)	3	History 15	3
History 15	3	Elective	6
Elective	3		

FORESTRY PREPARATORY

The Forestry Preparatory Course is intended to fit students to enter the best Forestry schools, and includes the subjects which are necessary to meet the requirements of those institutions. Within the last few years Forestry has become one of the most important professions, and the demand for trained foresters is greater than the supply.

SOPHOMORE YEAR

FIRST TERM		SECOND TERM	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Chemistry 1	3	Chemistry 1	3
Physics 21	2	Physics 21	2
Physics Laboratory 24-7	1	Physics Laboratory 24-7	1
Biology 1	3	Biology 1	3
History	3	History	3

JUNIOR YEAR

FIRST TERM		SECOND TERM	
Chemistry 35-2	2	Chemistry 35-3	2
Biology 3	3	Biology 3	3
Drawing 21-1	5	Surveying 41-3	2
Surveying 41-3	1	Political Science 1	3
Political Science 1	3	Elective	6

SENIOR YEAR

FIRST TERM		SECOND TERM	
Geology 21	1	Geology 23	1
Geology 22	2	Geology 24	2
Biology 7	3	Biology 7	3
Elective	9	Hydraulics 41-43	3
		Highways 41-21	3
		Dynamo-Electric Machinery 61-3	3

JOURNALISM

This course, designed for students who intend to adopt Journalism as a profession, is not intended as a substitute for experience. It aims to give the general education which is essential for work in this profession, placing emphasis on subjects which give an understanding of the life of to-day, and those which develop the power of accurate and fluent expression.

SOPHOMORE YEAR

FIRST TERM		SECOND TERM	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
English 11 or 12	3	English 11 or 12	3
Natural Science	3	Natural Science	3
History 1	3	History 1	3
Political Science 1	3	Political Science 1	3

JUNIOR YEAR

FIRST TERM		SECOND TERM	
History 3	3	History 3	3
English 17, 24, or 34	3	English 18, 34, or 36	3
Philosophy 3	3	Political Science 16	3
History 4 (or alternate)	3	History 8 (or alternate)	3
Elective	3	Elective	3

SENIOR YEAR

First Term		Second Term	
Philosophy 6	3	Philosophy 7	3
Law (1 or 5)	3	Philosophy 55	3
Political Science 6	3	Elective	9
Philosophy 55	3		
Elective	3		

Law Preparatory

The following course, which is arranged especially for students who are preparing to enter a law school, emphasizes the study of History, English, Economics, and Public Law. Among the more technical courses in Public Law, students may elect subjects which will enable them to test their fitness for the legal profession.

SOPHOMORE YEAR

First Term		Second Term	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Natural Science	3	Natural Science	3
History 1	3	History 1	3
Philosophy 1	3	Philosophy 2	3
Elective (English or Pol. Science)	3	Elective (English or Pol. Science)	3

JUNIOR YEAR

First Term		Second Term	
History 2 or 6	3	History 2 or 7	3
Law 1 (or alternate)	3	Philosophy 4	3
Philosophy 3	3	Law 3 (or alternate)	3
Elective	6	Elective	6

SENIOR YEAR

First Term		Second Term	
History 6 or 2	3	History 7 or 2	3
Law 5 (or alternate)	3	History 15	3
History 15	3	Law 9 (or alternate)	3
Elective	6	Elective	6

Medical Preparatory

The Medical Preparatory Course is intended to fit students for any medical school in the United States. The studies included are all of immediate importance in the professional training, and those of the fourth year, taken in the Tufts Medical School, complete the first year of the distinctively medical course. In this way it is possible to obtain the bachelor's and the doctor's degree in seven years.

SOPHOMORE YEAR

First Term		Second Term	
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Physics 1	3	Physics 1	3
Chemistry 35-2	2	Chemistry 35-3	2
Biology 1	3	Biology 1	3
History	3	History	3

JUNIOR YEAR

First Term		Second Term	
Physics 21	2	Physics 21	2
Physics Laboratory 24-7	1	Physics Laboratory 24-7	1
Biology 3	3	Biology 3	3
Chemistry 35-10	4	Chemistry 35-10	4
Philosophy 55	3	Philosophy 55	3
Elective	3	Elective	3

SENIOR YEAR

Corresponds to the first year of the Medical Course
(In Tufts Medical School, Boston)

ORGANIZED PHILANTHROPY

The following course in Organized Philanthropy has been arranged to fit the student for professional and volunteer social work, or to enter the professional schools which have lately been established in this field.

SOPHOMORE YEAR

First Term		Second Term	
German	3	German	3
Chemistry or Biology	3	Chemistry or Biology	3
History 1	3	History 1	3
Political Science 1	3	Political Science 1	3
Philosophy 1	3	Philosophy 2	3

JUNIOR YEAR

First Term		Second Term	
Political Science 2	3	Political Science 17	3
Political Science 6	3	Political Science 16	3
Political Science 17	3	Law 3 or 8	3
Law 1 or 5	3	Elective	6
Elective	3		

SENIOR YEAR

First Term		Second Term	
Law 5 or 1	3	Law 8 or 3	3
Philosophy 6	3	Philosophy 7	3
Political Science 4 or 10	3	Political Science 5	3
Elective	6	Political Science 13	3
		Elective	3

TEACHING

This course is designed to give a broad training, with a reasonable opportunity for specialization, and to include in particular the subjects now required of teachers in many of the larger cities. Students intending to teach Language are advised to take Latin in the Freshman year, on account of its fundamental value in the study of other languages.

The attention of students intending to teach Science is called to the courses in Biology, Physics and Chemistry.

SOPHOMORE YEAR

First Term		Second Term	
Philosophy 1	3	Philosophy 2	3
History 1	3	History 1	3
Natural Science	3	Natural Science	3
Foreign Lang., ancient or modern	3	Foreign Lang., ancient or modern	3
Major Work	3	Major Work	3

JUNIOR YEAR

First Term		Second Term	
Philosophy 55	3	Philosophy 55	3
Music 9 or 1	3	Music 10 or 21	3
Major and Elective Work	9	Major and Elective Work	9

SENIOR YEAR

First Term		Second Term	
Education 1	3	Education 2	3
Major and Elective Work	12	Major and Elective Work	12

Departments of Instruction

MAJOR DEPARTMENTS

Any of the following may be chosen as major departments:

ENGLISH
GERMAN
FRENCH
LATIN
GREEK
PHILOSOPHY
HISTORY AND PUBLIC LAW
POLITICAL SCIENCE
MATHEMATICS
PHYSICS
CHEMISTRY
BIOLOGY

In the subjoined statement of the subjects offered in the different departments, the name of the major instructor is that given at the head of each department that offers major work. In other cases the name is given of the instructor in general charge of the department. When two or more names appear, major students will be guided by the usage of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Subjects that continue through only one half-year are indicated by letters in parenthesis: thus (F) means "first half-year," (S) means "second half-year." Subjects not so indicated extend through both terms.

Unless otherwise indicated, classes meet three times weekly and the credit is three term hours for each half-year.

Subjects enclosed in brackets are not offered during the current year. In many cases alternates are indicated, which fill their places in the program for this year. If less than four qualified students apply for an announced course, the instructor is permitted to cancel the announcement unless the course is a part of the required work for any student applying. Subjects marked with an asterisk (*) will not be counted for honors. Subjects marked with a double asterisk (**) will be counted for honors only when special conditions are complied with.

12 ENGLISH

PROFESSOR JONES

The work of the department of English includes composition and the study of literature. Subjects 1, 2, 4, and 23 give practice in one or another form of composition as the result immediately held in view, but written English is required also in many of the classes aiming primarily at literary study. See also subject 7. Subjects 1 and 2 are prescribed for all students. Major students in English are required to take English 11 or 12 in the earlier years of their course. Other subjects offer opportunity for practice in advanced composition, and for the study of eminent authors, of leading critical essays, of the development of English drama and fiction. English 10, 11, or 12 may be counted for honors, provided only one of these subjects is so counted.

SUBJECTS

*1. The Forms of Discourse. Exposition and Argumentation. Lectures, text-books, outside reading, themes, and conferences. (F)

ASSISTANT PROFESSOR GILMER AND PROFESSOR DAVIES

*2. The Forms of Discourse. Description and Narration. Lectures, text-book, outside reading, themes, and conferences. (S)

ASSISTANT PROFESSOR GILMER AND PROFESSOR DAVIES

4. Advanced Composition. Lectures, themes, conferences. (S)

ASSISTANT PROFESSOR GILMER

English 4 is open to those who have obtained at least Grade C in English 1 and English 2.

[7. English Versification. Study of the nature and the forms of poetry Composition. (S) —— ——]

[**10. The English Bible. PROFESSOR MCCOLLESTER]

Will be given in 1914–15.

**11. General View of English Literature. The study of representative masterpieces. Lectures, text-books, required reading, papers.

ASSISTANT PROFESSOR GILMER

Will not be given in 1914–15.

[**12. American Literature. Lectures, required reading, text-book, essays. ASSISTANT PROFESSOR GILMER]

Will be given in 1914–15.

[16. Milton and his Time. Lectures, readings, brief critical essays. (S)
PROFESSOR JONES]

Will be given in 1914–15.

17. Shakespeare. Minute study of a few plays, lectures, quizzes.
(F) PROFESSOR JONES

18. Shakespeare. Reading of selected plays, lectures, brief critical essays. (S) PROFESSOR JONES

[19. The age of Chaucer. Study of forms and pronunciation, reading of selections from Chaucer and his contemporaries. —— ——]

[20. Old English. Introduction to the language and literature of the Anglo-Saxons, with lectures on the origin and early development of the English tongue. Grammatical and literary study of select prose and poetical texts. —— ——]

[21. The Principles of Criticism. Plato, Aristotle, Longinus, Quintilian, Burke, Lessing, Coleridge, Pater. (S) —— ——]

[23. The Short Story. Examples, and composition. (F)
ASSISTANT PROFESSOR GILMER]

Will be given in 1914–15.

24. Poetry of the Nineteenth Century, except Tennyson and Browning.
(F) PROFESSOR JONES

Will not be given in 1914–15.

25. Development of the Drama. ASSISTANT PROFESSOR GILMER

[26. Development of the English Novel, in the eighteenth and nineteenth centuries. PROFESSOR JONES]

29. Seminar. PROFESSOR JONES

English 29 is open only to advanced students of English.

34. Tennyson and Browning. Lectures, reading, brief critical essays.
PROFESSOR JONES

36. Thomas Carlyle. (S) PROFESSOR JONES

18 ORATORY

It is intended that the study of oratory shall benefit the student, whether or not he looks to public speaking as a part of his profession. Oratory 1 aims at securing intelligent, natural, and forcible speech. The principles that underlie good public speaking are pointed out, and applied in individual practice. Oratory 2 is not organically connected with Oratory 1, but offers practice in argumentation and debate to Sophomores, Juniors, and Seniors.

SUBJECTS

1. The Principles of Oratory. Enunciation and pronunciation; attitude and gesture; declamation; delivering of speeches, extempore and prepared; final original oration. (s) ASSISTANT PROFESSOR GILMER

[2. Argumentation and Debate. Text-book, papers, impromptu and prepared debate. Individual criticism. (F) ASSISTANT PROFESSOR GILMER]

For 1914–1915 students desiring this subject may elect 11-13 English in the Engineering School.

22 GERMAN

PROFESSOR FAY

The aim of the department is twofold, according as the student has entered with the elementary or a more advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elementary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; later the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced work the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms.

Six consecutive subjects are offered. While it is not impossible to take them all within the four college years, the scheme is based upon the supposition that the earlier subjects will have been taken in the preparatory school.

SUBJECTS

*1. Elementary German. The essentials of grammar, with composition. Reading of simple modern prose.

ASSISTANT PROFESSOR BABBITT

German 1 is the equivalent of the entrance requirement in Elementary German.

*2. Intermediate German. Reading of modern prose, lyrics and ballads; review of grammatical principles; dictation and composition.
ASSISTANT PROFESSORS REED and BABBITT

German 2 is open to entering students who have presented Elementary German for admission.

**3. Course in advanced reading. Selected works from the literature of the eighteenth and nineteenth centuries. Vocabulary practice.
ASSISTANT PROFESSOR REED

German 3 is open to entering students who have presented Intermediate German for admission. Either half-year may be counted as a half-subject.

**3A German Composition, written and oral. *One hour a week.*
ASSISTANT PROFESSOR REED

German 3A is open to students who are at the same time taking German 3 or 4. It is not open to those who have taken or are taking German 3B.

**3B. German Composition, written and oral.
ASSISTANT PROFESSOR REED

German 3B is open to students who have satisfactorily passed German 3 or its equivalent.

4. Schiller and Goethe. Maria Stuart, Wallenstein, and Ballads of Schiller; Egmont, and selections from prose works of Goethe. Collateral reading. Dictation. ASSISTANT PROFESSOR REED

German 4 is open to entering students who have presented Advanced German for admission. Juniors and Seniors whose major department is German may be permitted to take 4 and 5 in the same year.

5. Advanced reading in Lessing and Goethe. Nathan der Weise, Emilia Galotti, Laokoön; Tasso, Iphigenie, Faust, Parts I and II, with collateral reading. PROFESSOR FAY

6. History of German Literature, with illustrative works for leading epochs. Middle High German: Bachmann, Mittelhochdeutsches Lesebuch.
PROFESSOR FAY

32 FRENCH

PROFESSOR FAY

The plan and scope of the department are, in general, the same as those of the department of German, to the statement of which the student is referred. Six consecutive subjects are offered.

SUBJECTS

*1. Elementary French. The essentials of grammar, with composition, and the reading of short works of modern authors in prose and verse.
PROFESSOR LEWIS

French 1 is the equivalent of the entrance requirement in Elementary French.

*2. Intermediate French. Review of grammatical principles, especially with reference to syntax; exercise in composition; vocabulary practice; reading of modern fiction and drama, such as Mérimée's Colomba and Sandeau's Mademoiselle de la Seiglière. PROFESSOR LEWIS

French 2 is open to entering students who have presented Elementary French for admission.

**3. Reading of modern authors (Taine or de Vigny, and novelists); introduction to seventeenth-century classics (Corneille, Racine, Molière, Boileau). Review of grammatical principles, with advanced vocabulary practice. PROFESSOR LEWIS and ASSISTANT PROFESSOR BABBITT

French 3 is open to entering students who have presented Intermediate French for admission. Either half-year may count as a half-subject.

**3B. French Composition. Translation from the English (François' Advanced Composition), later on from the German, the work being based on Ploetz' Nouvelle Grammaire Française and Uebungen zur französischne Syntax. PROFESSOR FAY

French 3B is open to students who have completed French 3, or its equivalent, and at least one course in German.

4. Literature and Manners of the Seventeenth Century. Boulenger, Le Grand Siècle; Molière, Le Misanthrope, Les Précieues Ridicules, Les Femmes Savantes; Boileau, Les Héros de Roman; Madame de Sévigné; La Fontaine, Fables (selected); Warren's French Prose of the XVIIth Century; and selections from modern critics. PROFESSOR FAY

French 4 is open to entering students who have presented Advanced French for admission. Juniors and Seniors whose major department is French may be permitted to take 4 and 5 in the same year.

5. A brief glance at French literature previous to the Renaissance, and a more detailed study of the sixteenth, eighteenth, and the first half of the nineteenth centuries. PROFESSOR FAY

6. Historical Grammar. Old French readings: Chanson de Roland; Villehardouin, Joinville. Wright's History of French Literature. Detailed study of some period, with illustrative texts. PROFESSOR FAY

42 ITALIAN

PROFESSOR FAY

The work offered in Italian is open to those only who have had two years of college study in French, or its equivalent. With such previous training, the student should be able to acquire with rapidity a reading knowledge of the language, and thus to become acquainted within the year with characteristics of contemporary and classic literature. This subject is presented in alternate years.

SUBJECT

[1. Grandgent's Grammar and Composition; Bowen's Reader; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition).
PROFESSOR FAY]

52 LATIN

PROFESSOR DENISON

The aim of the department of Latin is to lead students to a thorough appreciation of a language and people that have had profound influence on modern life and literature. A wide range of reading is offered, to give opportunity for acquaintance with every important division of Latin literature. Considerable time is devoted to reading at sight. The attention of students is directed constantly to the history, archæology, art, public and private life, and religion of the Roman people, as well as to the formation and structure of their language and its relation to other languages. Due emphasis is laid on the connection between ancient and modern life and thought. The various reading courses are supplemented with lectures on appropriate topics, and are illustrated from time to time with the stereopticon. Courses 3, 4, 6, as well as all subjects in Classical Archæology, are suitable for graduate students. The authors and works named below may be changed, but are fairly indicative of the character of the work in the several subjects.

SUBJECTS

*1. Cicero, De Senectute, or selected letters; Vergil, Eclogues; Horace, Odes, Books i–iii; Livy, selections; reading at sight; lectures on suitable topics. PROFESSOR DENISON

Latin 1 is introductory to all later subjects.

2. Pliny, selected letters; Horace, Odes, Book iv; Terence, Phormio; Apuleius, Story of Cupid and Psyche; Petronius, Cena Trimalchionis. This subject introduces the student to the early drama and also to the authors of the Silver Age. PROFESSOR DENISON

Latin 2 is open to students who have completed Latin 1.

[3. Juvenal, principal Satires; Martial, selected Epigrams; Cicero, Dream of Scipio; Tacitus, Annals; Catullus; reading at sight.
PROFESSOR DENISON]

4. Horace, Satires and Epistles; Plautus, one or two plays; Cicero, selected letters; Tibullus and Propertius; reading at sight.
PROFESSOR DENISON

Subjects 3 and 4 will be given in alternate years, and are designed for those who have completed Latin 2, or its equivalent. They may, by special arrangement with the instructor, be taken as half-subjects in either half-year.

*5. Latin Composition. This course may accompany Latin 1 or be taken later in connection with other subjects offered by the department. *One hour a week.* PROFESSOR DENISON

6. Latin Composition. Latin 6 is open only to students who have completed Latin 5. In it particular attention is paid to idiom and style. By reason of the variation of the work from year to year, the subject may be taken a second time with due credit. *One hour a week.* PROFESSOR DENISON

NOTE: — The attention of Greek and Latin students is called to related subjects listed under Classical History and Archæology.

62 GREEK

PROFESSOR WADE

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the practice of reading at sight is encouraged, and especial effort is made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspiration of a noble literature.

To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

SUBJECTS

[*1. Elementary. Goodwin's Grammar; Xenophon, Anabasis; Homer
PROFESSOR WADE]

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college. This subject may be taken (without credit) as a normal course by advanced students, on consultation with the instructor. *Double course, six hours a week.*

[2. Xenophon, Memorabilia; Homer, Odyssey; Euripides, one play.
PROFESSOR WADE]

Greek 2 is for students who have passed Greek 1, or the entrance requirements in Greek.

[3. Herodotus, Books VII and VIII; Æschylus, The Persians; Sophocles, Antigone; Euripides, Alcestis. PROFESSOR WADE]

[4. Lyric and Elegiac Poets, to Pindar. Aristophanes: Clouds, Birds, Acharnians, Frogs, with study of social life in Athens in the fifth century B. C. PROFESSOR WADE]

[5. Theocritus, Idyls, with study of the Alexandrine age; Lucian; Homer, the Iliad, or the Odyssey, entire, with lectures on the results of the more recent investigations of the Homeric question. PROFESSOR WADE]

Subjects 4 and 5 will be given in alternate years, and are designed for those who have completed Greek 3 or its equivalent. They may, by arrangement with the instructor, be taken as half-subjects in either half-year.

NOTE:—The authors and works enumerated under courses 2, 3 and 4 are not necessarily repeated each year, but are intended to give a general idea of the aim and scope of the courses.

[**6. Greek Composition; practice in sight reading. *One hour a week.*
PROFESSOR WADE]

Greek 6 may be taken by anyone who has had the equivalent of Greek 1.

[7. Greek Composition; reading at sight. *One hour a week.*
PROFESSOR WADE]

Greek 7 is open only to students who have completed Greek 6.

NOTE:—No student can be recommended as a teacher of Greek who has not taken at least one subject in Greek composition.

28 CLASSICAL HISTORY AND ARCHÆOLOGY

Under Classical History and Archæology are grouped subjects of the Greek and Latin departments which deal, to a large measure in lecture form, with the art, history, life (both public and private), and religion of the Ancient Greeks and Romans. The work will consist of lectures, collateral reading and investigation, and papers. There will be illustration, wherever possible, with photographs, stereopticon, and specimens. The following subjects are intended to supplement the reading of classical authors, which naturally forms the basis of serious study in Classical History and Archæology.

SUBJECTS

1. Greek, Roman, and Etruscan Architecture. (F)
PROFESSOR DENISON

[2. Greek and Roman Sculpture. (S) PROFESSOR WADE]

[3. Roman Private Life. (F) PROFESSOR DENISON]

Classical Archæology 3 will be given in 1914–1915.

[4. Greek Public and Private Life. (S) PROFESSOR WADE]

In subjects 3 and 4 there will be systematic treatment of such topics as the customs pertaining to birth, education, marriage, death, the house, furniture, dress, meals, amusements.

[5. Roman Religion and Public Life. (F) PROFESSOR DENISON]

In subject 5 special stress will be laid on the Roman Religion, but there will be systematic study of other topics such as the topography of Rome, political, legal and military institutions, measures and money, books, inscriptions, chronology and calendar.

Classical Archæology 5 will be given in 1915–16.

[6. Greek Mythology and Religion. The underlying principles of Greek religion will be considered. The Myths will be treated in their relation to ancient and modern literature and art. Lectures and text book (Fairbanks, Greek Mythology). (S) PROFESSOR WADE]

[7. Greek History. From the earliest times to the death of Alexander, with consideration of the sources. Textbook (Bury) and lectures. (F)
PROFESSOR WADE]

8. History of Rome. From the beginnings of the City to the Fall of the Western Empire. Lectures, text book, recitations, study of the sources. (S) PROFESSOR DENISON

16 PHILOSOPHY*

PROFESSOR SCHMIDT AND PROFESSOR TOUSEY

Courses in the history of philosophy are unprofitable for beginners who have neither read the authors discussed in the text-books and lectures, nor formed any clear idea of the kind of problems with which philosophy deals; the department therefore does not offer for next year the two elementary courses in the History of Ancient and Modern Philosophy. In their stead will be given an "Introduction to Philosophy," designed primarily to meet the needs of the general student who has not time for special work in philosophy and who yet needs a perspective of what philosophy is about and what kind of help it may give him. Incidentally the course will introduce the student to the classics in philosophy. Some of these works, chosen according to individual needs and predilections, will be studied under the guidance of the instructor. The "Introduction to Philosophy" need not precede the special courses in ethics, logic, psychology; but the student is advised to begin, whenever possible, with the introductory course.

1. Introduction to Philosophy. Lectures, conferences and assigned reading. (F) PROFESSOR SCHMIDT

Will not be given in 1914–15.

2. Introduction to Philosophy. Lectures, conferences and assigned reading. Open only to those who have passed Philosophy 1. (S)

Will not be given in 1914–15. PROFESSOR SCHMIDT

3. Logic. An elementary exposition of logic, in the modern sense of the word, of critique of cognition, structure of systems, and scientific methods. (F) PROFESSOR SCHMIDT

4. Logic. The "new" logic. An introduction to the calculus of classes and propositions; with applications. This course presupposes Philosophy 3. (S) PROFESSOR SCHMIDT

55. Psychology. An elementary lecture course. Normal human psychology will form the main subject of the course; but abnormal and supernormal phenomena will be studied in so far as they shed light on normal psychology. Lectures, illustrative experiments, conferences.

PROFESSOR SCHMIDT

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*The three departments of Philosophy, History and Public Law, and Political Science constitute the group of Mental and Moral Science, in at least two of which twelve term-hours of work are required for the degree of A.B.

[17. Logic. Studies in argumentative literature, with the aim to bring logical theory into relation with the practical requirements of research, advocacy, and criticism ; and to illustrate the principles governing the effective presentation of arguments. Use will be made of selected examples of reasoned discourse, supplemented by discussions, and constructive work by the student. (s) PROFESSOR TOUSEY]

Philosophy 17 is open only to those who have received credit in Philosophy 3.

[8. Ethics. A critical survey of the evolution of ethical ideals, followed by a constructive theory. But the main emphasis of the course will be laid on the application of the theory to the problems of the modern world of action. PROFESSOR SCHMIDT]

Will be given in 1914–15.

15. The Philosophy of Theism. The final problem; limits of the intelligence ; final cause in nature ; evidences of a moral order ; theistic and anti-theistic argumentation ; intuitivism. PROFESSOR TOUSEY

16. Experimental Psychology. An elementary laboratory course; open only to those who either have finished or are taking the course in general psychology (55). Nine hours of laboratory work counting for three term hours. (s) PROFESSOR SCHMIDT

26 EDUCATION

The courses in Education are of value for those pursuing general culture as well as for those intending to become teachers. They are arranged to meet the growing requirements of the best city school boards. Attention is called to the course of study outlined for teachers, as given under "Courses of Instruction."

SUBJECTS

1. Principles of Education. Brief introductory study of the Educational Reformers. Ruediger's Principles of Education studied critically, supplemented by lectures, discussion and reports. (F)
PROFESSOR SCHMIDT

[2. Child Study. Child psychology; The relation of the school to child welfare including a discussion of such problems as school hygiene, backward children, juvenile delinquents and public play grounds ; Principles of moral and religious education. (s) PROFESSOR SCHMIDT]

NOTE:—After 1915 psychology will be required for courses in education.

36 HISTORY AND 46 PUBLIC LAW*

PROFESSOR ANDREWS AND PROFESSOR BOLLES

The department aims to develop the idea of unity in the history of mankind, and to make the study of all history of practical value through its relation to present-day problems and conditions. To this end the approach is made through subjects intended to give a thorough scientific knowledge of essential facts, and so arranged as to show these facts in their proper relations. History 1 is the introductory subject by which the student is prepared for more detailed work. History 6 and 7 supplement History 1 chronologically while History 19 and 20 do so geographically, being devoted to the study of Eastern and Southern Europe as History 1 is to Western. History 2 is devoted to the history of England, History 3 to the history of the United States. The subjects numbered from 4 to 20 offer to properly qualified students opportunity to make a more detailed study of limited periods. These subjects are arranged in series, which alternate with each other from year to year, and thus cover a considerable range. History 15 is devoted to research.

Students expecting to make History their principal study are urged to devote considerable time in their first and second years to the study of modern languages. In History 4, 6, 7, 8, 15, 19, and 20 a reading knowledge of French is assumed.

In the division of Public Law and Administration the object is to furnish such general knowledge of political institutions and their working as is needed by every intelligent citizen, and also to assist those who expect to enter the legal profession or the government service. The study of law and government is closely related to the study of history, and hence one year of history is advisable in preparation for the work in Public Law. The work in this group begins with a study of the political institutions of the United States, subjects dealing with the institutions of our own and of other countries, followed by subjects treating international relations. A knowledge of French is desirable, and in some cases indispensable.

See note to introduction of the Department of Philosophy.

36 History

SUBJECTS

1. The General History of Europe to the French Revolution. History 1 is an outline course, designed to give a comprehensive view of the various political, religious, industrial, and social factors in the history of Europe, and thus to pave the way for a more detailed study of limited periods. Text-books, lectures, assigned reading and thesis. PROFESSOR ANDREWS

History 1 and 2 will not be accepted for an advanced degree. Students desiring to take as many subjects as possible in the department should elect History 1 and 2 in their second year.

2. General History of England. Text-book, lectures, analyses, and themes. PROFESSOR BOLLES

3. General History of America. Text-book, lectures, analyses, and themes. PROFESSOR BOLLES

[4. The History of Europe during the period of the Renaissance and Reformation; the study of the Italian cities and the rise of Italian humanism; the religious, intellectual, economic, and political conditions which gave rise to the Protestant movement in the various countries. Emphasis will be placed upon the beginnings of modern diplomacy, and of international relations. Text-books, lectures, assigned reading, and thesis. (F) PROFESSOR ANDREWS]

[8. The History of Europe during the period of the Catholic Reformation, the study of the Inquisition, the Jesuits, and the Council of Trent; the history of Spain to the peace of the Pyrenees; the affairs of Central and Eastern Europe; the development of France through the rule of Richelieu and Mazarin, and the causes, events, and results of the Thirty Years War. Text-book, lectures, assigned reading and thesis. (S) PROFESSOR ANDREWS]

History 4 and 8 may be expected in 1914–1915.

[6. The French Revolution, the Napoleonic Period and the history of Europe to 1850. Text-book, lectures, assigned reading and thesis. (F) PROFESSOR ANDREWS]

[7. Modern Europe, 1850–1913. One of the chief purposes of History 7 is to furnish some explanation of present-day questions in European politics. assigned reading and thesis. (S) PROFESSOR ANDREWS]

History 6 and 7 may be expected in 1914-15.

19. The History of the Nearer East from the earliest times to the beginning of the decline of the Ottoman Empire. This subject includes the history, religions, institutions and political and economic conditions of

the countries and peoples in the Nearer East, including especially the Byzantine Empire, the Balkan Peninsula, Greece, Asia Minor, Egypt, and Northern Africa. Lectures, assigned reading, and thesis. (F)
Professor Andrews

20. The History of the Nearer East from the beginning of the decline of the Ottoman Empire to the present day. Special emphasis will be placed upon the present economic and political conditions. Lectures, assigned reading, and thesis. (S) Professor Andrews

15. Seminary in History and Public Law. Investigation of selected topics from the sources. During the year 1913–14 the subject of study will be taken from the recent history of Europe. History 15 is open only to such students as receive the special permission of the instructor. *Hours and credit to be arranged with the instructor.* Professor Andrews

46 Public Law and Administration

SUBJECTS

☞History 1 should precede or accompany any subject in Public Law (except Public Law 21) but students may be admitted to classes by special permission of the department. Students desiring to take all the subjects in this group should elect History 1 in their second year, as well as Public Law 1 and 2, or their alternates.

[21. American and English Government. A general description of the structures and functions of present day government with especial reference to the United States and Great Britain, particularly the composition and powers of legislative bodies, the relations between the executive and legislature, the powers of the courts, the organization and influence of political parties, etc. (S) Professor Andrews]

This subject cannot be counted toward satisfying the prescribed work in Mental and Moral Science or as part of the major requirement in History and Public Law.

1. Political Institutions of the United States — Federal, State, and Municipal. A study is made of government from the standpoint both of constitutional arrangements and of its actual working as modified by usage and existing conditions. Political parties, their organization and history, together with the attempts made to regulate them by law, will be studied. Text-book, lectures, assigned reading and thesis. (F)
Professor Andrews

8. Colonial Governments: The governments of colonies and dependencies throughout the world. Attention will be given to the history of

modern colonization, to past and present experiments in administration, and to the international aspects of the colonial development of modern nations. Lectures, assigned reading and thesis. (s)

PROFESSOR ANDREWS

3. Modern English Government. Detailed study of the actual working of the English Government. Attention will be given to the procedure of Parliament and its relation to the executive, to the administrative structure, the organization and influence of political parties, and colonial relations. Comparisons with American and Continental political conditions will be attempted. Text-book, lectures, assigned reading, and thesis. (s)

PROFESSOR ANDREWS

[4. European Government and Politics. A study of the constitutions of the chief European states, together with the consideration of the most important questions of European politics. A reading knowledge of French is desirable. Text-book, lectures, assigned reading, and thesis. (s)

PROFESSOR ANDREWS]

Public Law 4 may be expected in 1914–1915.

[5. International Law. The history of international law and a consideration of its leading principles. Text-book, lectures, assigned reading, and thesis. (F) PROFESSOR ANDREWS]

[9. The History of Modern Diplomacy, from the Thirty Years War to the present day, including the study of the principal alliances, congresses and diplomatic controversies between European nations. Lectures, assigned reading, and thesis. (s) PROFESSOR ANDREWS]

Public Law 5 and 9 may be expected in 1914–15.

66 POLITICAL SCIENCE*

PROFESSOR METCALF

In its course of instruction, the chief aim of the department of Political Science is to give a general view of the most important branches of economics, beginning with the elements of the science and passing by degrees to work of the investigative order. In addition to this broad general outline of economics, the courses and the methods of study are arranged with reference to the constantly increasing needs of those who are fitting themselves for various practical careers, such as banking, transportation, or mercantile work; and to those who look forward to social and philanthropic work as a profession. Subjects

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* See note to introduction of the Department of Philosophy.

13, 6, 16, 10 and 17, are especially designed as training for those who are planning for a business career, or for social and philanthropic work as a profession.

Subject 1 is designed to lay the foundation for the more advanced work, but endeavors at the same time to satisfy the wants of those who seek simply a general knowledge of economics. It is open to Freshmen. The character of the work in the advanced subjects is outlined in connection with the following statement. The attention of students is called to allied subjects in the department of Applied Christianity.

SUBJECTS

*1. Elements of Economics. (a) Exposition of the fundamental principles of the production, distribution, exchange, and consumption of wealth. (b) The present organization and management of industry, trades unions, coöperation, profit-sharing, immigration, child labor, woman in industry, factory legislation, workingmen's insurance, socialism. Taussig's Principles of Economics will be used as a guide. Economics 1 does not count for honors. PROFESSOR METCALF AND MR. LIMING

Economics 1, or its equivalent, is introductory to all the other subjects offered by the department.

[2. Modern Industrial History of Europe. After a brief survey of the economic conditions in the European countries at the close of the Middle Ages, the chief attention will be given to the Industrial Revolution in England, and to the rise of modern industrial Germany. Lectures and recitations. (F) MR. LIMING]

[22. Economic and Industrial History of the United States. Bogart's Economic History of the United States is used as a guide. (S)
MR. LIMING]

[3. Sociology. This course will be theoretical, dealing with the nature and scope of Sociology, its relation to other studies, especially to Philosophy, Ethics and Economics, with consideration of various theories of social progress. Lectures, discussions and assigned reading, principally from Carver's "Sociology and Social Progress." (F)
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13. Practical Sociology. Concrete problems in the light of the laws of social science and principles of social progress. The family, history and modern methods of poor relief, criminology, penology, housing and city planning; public control, ownership, and operation of public service

utilities; education for social efficiency; principles adapted to the work of social organizers; social and philanthropic work as a profession for men and women. (S) MR. LIMING

4. Principles of Public Finance. Public expenditures; classification of public revenues; recent reforms in taxation; the development and significance of public debts; financial administration; recent European and American works on finance. The Science of Finance, by Adams, is used as a guide. Lectures and discussions. (F) MR. LIMING

5. Fiscal History of the United States: an historical course, with special reference to the financial experience of the United States. Leading topics are Hamilton's financial system; protection and revenue tariffs; the bank question; the fiscal policy of the Civil War; resumption of specie payments; the national banking system; state and local taxation; silver legislation and the panic of 1893; government loans; present currency problems. Dewey's Financial History of the United States is used as a guide. (S) MR. LIMING

6. Modern Industrial Combinations. The economics of corporations, with special reference to the so-called trust problem. Among the topics treated are trust promotion, capitalization, trusts and industrial efficiency, influence of combinations upon prices, profits, wages, rights of investors, international trade, industrial stability, and business honor; the practical results attained through publicity, taxation, recent court decisions, and State regulation. Lectures, recitations, and reports. Van Hise, Concentration and Control, is used as a text. (F) PROFESSOR METCALF

16. Modern Labor Problems. This subject deals mainly with the social and economic problems arising from the relations of employers and their laborers. The chief topics will be the growth, methods, and aims of modern associations of wage earners; methods of conciliation and arbitration; strike and factory legislation; employers' liability and recent compensation acts; compulsory publicity; provident institutions and friendly societies; the relation between trade unions and scientific management. Each member of the class will be expected to make a report upon a labor union. Carlton's History and Problems of Organized Labor is used as a text. Lectures and recitations. (S) PROFESSOR METCALF

10. Transportation Problems. The economic, financial, and social problems arising from modern systems of transportation, with special reference to railway transportation, in the United States. The chief topics are brief historic survey of water and railway transportation; railway charters, powers of directors and stockholders, the nature of railway securities; railway traffic; fares, rate making, rebates, pooling and railway

consolidations; the American systems of State railway commissions, the Interstate Commerce Commission, the recent extensions of Federal control; the effects of transportation systems upon industrial competition. A part of the time will be devoted to some of the more recent problems of electric railway development. A special report will be required from each student of the subject. Lectures and recitations. *Three hours, to be arranged.* (F) MR. LIMING

17. Industrial Organization and Business Management. Brief survey of the evolution of modern capitalism; plant equipment; the concentration and integration of modern business; defects of the present industrial order; types of business administration and management; the causes and effects of industrial overstrain; the principles, goal, applications, results, and dangers of vocational guidance; what employer, employee, consumer, and trade unions gain through the economies of scientific management. Lectures, discussions, and thesis. PROFESSOR METCALF

Either half year may be taken as a half subject.

7. The History of Economics: an account of the beginnings, the progress, and the various schools of economic science; study of the writings of Adam Smith, Ricardo, Mill, and others. Political Science 7 is open to advanced students who are specializing in the department. A reading knowledge of French and German is desirable. (S) PROFESSOR METCALF

9. Seminar in Economics and Sociology, designed for advanced students who are specializing in the department. Questions in economics, statistics, or sociology may be selected. *Hours and credit to be arranged.* PROFESSOR METCALF

14 MATHEMATICS

PROFESSOR WREN AND PROFESSOR RANSOM

The aim of the instruction in mathematics is to cultivate power of exact thinking, as well as skill in symbolic methods of drawing necessary conclusions. The class-room work is a combination of lectures with questioning of the students to ascertain that the points presented have been duly comprehended.

Mathematics 3, with 1 or 2, constitutes the required work in mathematics. The two required subjects should be taken in the Freshman year. Students who intend to pursue advanced work in the department should take 1 in preference to 2, and should take 4, 5, and 6 in the Sophomore and Junior years. They may then elect any of the remaining subjects.

SUBJECTS

3. Trigonometry. The trigonometric functions, trigonometric analysis, solutions of plane triangles and of right spherical triangles. (F)
PROFESSOR WREN and PROFESSOR RANSOM

1. Algebra. Binomial theorem, logarithms, permutations and combinations, probability, determinants, theory of equations, etc., preceded by a brief review of Elementary Algebra. (S)
PROFESSOR WREN and ASSISTANT PROFESSOR DILLINGHAM

2. Solid Geometry. Solid and spherical geometry including original demonstrations and the solution of numerical problems. (S)
PROFESSOR RANSOM AND ASSISTANT PROFESSOR DILLINGHAM

4. Analytic Geometry. The straight line, circle, parabola, ellipse, hyperbola, higher plane curves, with an introduction to analytic geometry of three dimensions. (F) ASSISTANT PROFESSOR DILLINGHAM

5. Elements of Calculus. Differentiation and integration of the elementary forms of algebraic and transcendental functions with simple applications. (S) ASSISTANT PROFESSOR DILLINGHAM

6. Differential and Integral Calculus. A continuation of course 5, involving application to mechanics and to the theory of plane curves, the determination of lengths, areas and volumes. (F) PROFESSOR WREN

7. Differential and Integral Calculus (advanced). Numerous applications of the Calculus and the more difficult methods of integration. (S)
PROFESSOR WREN

8. Modern Geometry. An advanced course in Plane Analytic Geometry involving analysis by means of homogeneous coördinates and introducing the elementary geometric transformations. (S)
ASSISTANT PROFESSOR DILLINGHAM

9. Theory of Equations and Determinants. Transformation of equations; cubic and quartic equations; applications of substitution groups; classification of linear simultaneous equations; properties of determinants. (F)
ASSISTANT PROFESSOR DILLINGHAM

10. Differential Equations. An elementary course including the solution of ordinary and certain partial differential equations with geometrical and mechanical applications. (S) ASSISTANT PROFESSOR DILLINGHAM

12. Vector Analysis. Sums and products; differential operators; applications to geometry, electricity, and dynamics. (F) PROFESSOR RANSOM

Mathematics 12 is open to students who have completed Mathematics 1, 2, 3, 4, 5, and 6.

14. Theoretical Mechanics. A problem course dealing mainly with dynamics of a particle, and dynamics of a rigid body, Lectures and recitations. (F) Mathematics 6 and 10 must precede. *Counting as three term hours.* ASSISTANT PROFESSOR MARVIN

24 PHYSICS

ASSISTANT PROFESSOR MARVIN

The courses of instruction in Physics are designed to meet the needs of three classes of students: first, those who desire the work for its informational and educational value; second, those intending to pursue the study of medicine, chemistry, or other related science; third, those intending to continue the study of Physics in a graduate school.

The aim of the Department is to make the student familiar with the principles of Physics, and to develop in him some facility and power in the application and use of these principles.

SUBJECTS

*1. General Physics. A course of lectures and recitations intended to acquaint the student with the fundamental principles of Physics. It is to be elected by students who choose Physics as their prescribed science. Must be preceded or accompanied by Mathematics 3.

ASSISTANT PROFESSOR MARVIN, MR. POTE, and MR. KNIGHT

21. General Physics. Problem Course. This course is a continuation of, and must be preceded by Physics 1. *Two recitations per week. Counting as four term hours.* ASSISTANT PROFESSOR MARVIN

24-7. Physics Laboratory. A laboratory course in General Physics, intended to follow physics 1. *One three-hour period per week. Counting as two term hours.*

ASSISTANT PROFESSOR MARVIN, MR. POTE, and MR. KNIGHT

NOTE. Physics 1, 21, and 24-7 satisfy the Physics requirement for the courses in Chemistry and Biology, and are required for all other courses in Physics.

2. Electricity and Magnetism. Mathematical Theory. Lectures and recitations. Mathematics 5 must precede. (F) *Counting as three term hours.* ASSISTANT PROFESSOR MARVIN

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*Physics 1 will comprise two lectures and one laboratory period per week, beginning with 1914-15.

6. Wave Motion and Light. A brief treatment of geometrical Optics is followed by a discussion of reflection, refraction, diffraction, interference, polarization, double refraction, emission and absorption from the standpoint of the wave theory. Lectures and recitations. (S) Mathematics 4 and 5 must precede. ASSISTANT PROFESSOR MARVIN

[9. Theory of Heat. A discussion of the classical experiments of Regnault, Joule and others, is followed by an introduction to the Kinetic Theory and Thermodynamics, and a discussion of recent developments in the field of Radiation. Lectures and recitations. Given in 1914–15. (S) *Counting as three term hours.* Mathematics 5 is prerequisite. ASSISTANT PROFESSOR MARVIN]

11. Conduction of Electricity Through Gases, and Radioactivity. Lectures and recitations, with collateral reading. Reports on original papers appearing in the literature of the subject are required from time to time. (F) Physics 2 must precede. *Counting as three term hours.* MR. POTE

17. Advanced Physics Laboratory. Open to Juniors and Seniors whose major department is Physics, and to other Juniors and Seniors whose qualifications are satisfactory to the head of the department. The course may be pursued for one, two, three or four terms, subject to the approval of the head of the department. *One three hour period per week. Counting as one to four term hours, according to the number of terms in which it is pursued.* ASSISTANT PROFESSOR MARVIN and MR. POTE

Mathematics 14 may be counted towards a major in Physics.

34 CHEMISTRY

PROFESSOR DURKEE AND ASSISTANT PROFESSOR COBB

The instruction is by means of lectures, recitations, and laboratory work. The lectures, illustrated with numerous experiments, are intended to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including a brief account of the chemistry of the carbon compounds and the principal technical processes. In the laboratory the student has an opportunity to verify some of the chemical theories, and to become familiar with substances and their chemical behavior. The lectures are supplemented by written exercises and recitations in the laboratory. An opportunity to study physical chemistry is afforded by subject 11, a course of lectures with laboratory practice, in which simple physical and chemical measurements are made.

The instruction in qualitative analysis is given through a year, in two subjects (2 and 3), taught in part by lectures and recitations, but mainly by work in the laboratory. During the advanced course the student is required to analyze correctly alloys, mixtures of salts, minerals, slags, and other metallurgical products. Quantitative analysis is taught for the most part in the laboratory, and is designed to give the student the theoretical knowledge and skill in manipulation which are necessary for success in this kind of work. In subject 4 the student is required to analyze the simpler salts, alloys, and minerals. In subject 5, more complicated minerals, alloys, ores, and commercial and food products are analyzed. Organic analysis is included. Technical gas analysis (subject 9) is taught by lectures and laboratory work. The Orsat, Hempel, and Elliott systems are used. Assaying (subject 7) is adapted to familiarizing the student with the practical methods and theory of sampling and assaying gold and silver ores. The above subjects cover a comprehensive study of analytic chemistry, and are intended to give the student such thorough theoretical and practical knowledge as to prepare him for analytical work of almost any description. Metallurgy (subject 8) is intended to give the student some of the more important methods of production of iron and steel from ores. It should be taken after or in connection with Fire Assay (subject 7). The metallurgy of gold and silver is an alternative.

The work in organic chemistry consists of a course of lectures, together with recitations and laboratory work, which are designed to cover the general principles and methods, and include a description of the most important organic compounds. The laboratory practice in organic chemistry will be carried on in connection with subject 10, and will include the preparation of many typical compounds.

In Chemistry 12, opportunity will be given advanced students, under the direction of instructors, for the consideration and discussion of chemical subjects and recent investigations.

SUBJECTS

1. General Chemistry. An introductory course in theoretical and descriptive inorganic chemistry, with a thorough consideration of the simplest carbon compounds and principal technical processes. Lectures, recitations, and laboratory work. *Two lectures, and one three-hour laboratory period. Counting as six term hours.*

PROFESSOR DURKEE, ASSISTANT PROFESSOR COBB,
MR. BAKER, and ASSISTANTS

35-2. Qualitative Analysis for the detection of the metals, a course which includes the experimental development of schemes for the division of the metals into groups, the separation and detection of the metals in each group, — a study of all the chemical changes and analytical details, together with the correct analysis of six known solutions and thirteen unknown. Lectures, laboratory work and recitations. *Two three-hour periods.* (F) *Counting as two term hours.*

PROFESSOR DURKEE, MR. BAKER, and ASSISTANTS

35-3. Qualitative Analysis. Advanced, dealing with methods to effect solution of solids, the detection of mineral and common organic acids, the complete analysis of inorganic solids, including mixtures of salts, minerals, alloys, and slags. Three known and thirteen unknown are required, and thorough study of the chemical changes and conditions involved in the analyses. Lectures, laboratory work, and recitations. *Two three-hour periods.* (S) *Counting as two term hours.* MR. BAKER

4. Quantitative Analysis. Theory and practice of gravimetric and volumetric analysis, including the determination of chlorine by the ordinary and Gooch crucible methods, iron and sulphur in furous ammonium sulphate, silica in a silicate, phosphorus in a phosphate, complete analysis of dolomite, and brass, preparation of strictly half-normal sodium hydroxide and hydrochloric acid solutions, the volumetric analyses of soda ash and oxalic acid, the analysis of iron ore by the dichromate and permanganate methods, determination of chromium in chromite, of antimony by the iodine method, and silver by the sulphocyanate method. Lectures and laboratory work. *Three three-hour periods. Counting as six term hours.*

PROFESSOR DURKEE and MR. BAKER

5. Quantitative Analysis. Technical. Work varied somewhat to meet the needs of individual students. Course ordinarily comprises proximate analysis of coal, nitrogen in coal, by Kjeldahl's method, complete analysis of boiler scale, mineral and sanitary analysis of water, determination of copper in ores by iodine aud cyanide methods, of zinc by ferro-cyanide method, complete analysis of Babbitt metal, determination of lead in ores,

and manganese, sulphur, phosphorus, silicon and carbon in iron and steel. Organic analysis. Laboratory work. *Three three-hour periods. Counting as six term hours.* PROFESSOR DURKEE

7. Fire Assay. A course which deals with the theory and practice of sampling and assaying gold and silver ores. Open to students who have taken 1, 2, 3, and 4. *Two three-hour periods.* (S) *Counting as two term hours.* PROFESSOR DURKEE

8. Metallurgy of Iron and Steel, considered largely from the chemical side and includes the study of ores, fluxes, fuels, furnaces, and the other mechanical devices used in the commercial production of pig iron, wrought iron, and steel, together with the solution theory of iron and steel, heat treatment of steel, and production of malleable cast iron. Metallurgy of Gold and Silver is an alternative. Lectures, recitations, and laboratory work. Chemistry 8 is open to students who have taken Chemistry 1. *Two lectures a week, to be arranged.* (S) *Counting as two term hours.*

MR. BAKER

9. Gas Analysis, by the Orsat, Elliot, and Hempel systems. Lectures and laboratory work. Chemistry 9 is open to students who have taken Chemistry 1, 2, 3, and 4. *One three-hour period.* (F) *Counting as one term hour.* PROFESSOR DURKEE

35-10. Organic Chemistry. This course consists of lectures, recitations, and laboratory work. It is intended to familiarize the student with the typical compounds of carbon and their more important derivatives. The work in the laboratory includes the preparation of certain of the more important substances referred to in the lectures, and the identification of certain classes of compounds. Lectures, recitations, and laboratory work. Chemistry 10 is open to students who have taken Chemistry 1. *Three lectures and one three-hour laboratory period. Counting as eight term hours.*

ASSISTANT PROFESSOR COBB

11. Physical Chemistry. The subject matter of this course consists largely of the principles usually included under the head of Physical Chemistry. The work in the laboratory consists of physical chemical measurements and experiments of a physical chemical nature. Lectures, recitations, and laboratory work. Chemistry 11 is open to students who have taken Chemistry 1, 2, and 4. *Two lectures and one three-hour laboratory period. Counting as six term hours.* ASSISTANT PROFESSOR COBB

12. Discussion of Chemical Subjects and Recent Investigations. *One hour a week.* (F)

PROFESSOR DURKEE and ASSISTANT PROFESSOR COBB

17. Applied Chemistry. A course dealing with the most important applications of inorganic and organic chemistry to manufacturing purposes, such as the production of sulphuric acid, soda, illuminating gas, and sugar. Lectures, visits to plants, text-book work, and recitations. *Two lectures or recitations and one three-hour laboratory period. Counting as six term hours.*
PROFESSOR DURKEE

16. Thesis. Investigation of a problem in Inorganic, Organic, or Technical Chemistry. Open to students of A.B. and Science Courses who have satisfactorily completed Chemistry 1, 2, 3, 4, 5, and 10. *Nine laboratory hours a week, to be arranged. Counting as six term hours.*
PROFESSOR DURKEE and ASSISTANT PROFESSOR COBB

19. Chemistry. This course is primarily intended to enable the students to acquire facility in reading chemical German. The work consists of recitations and special reports on assigned subjects. These assignments are chiefly to articles in the German chemical journals. Open to Juniors and Seniors, candidates for A.B. or B.S., taking chemistry as a major subject, who have had not less than two years of college German or its equivalent. *To be arranged.* (F) ASSISTANT PROFESSOR COBB

44 BIOLOGY

PROFESSOR NEAL AND PROFESSOR LAMBERT

Instruction in biology is given by laboratory work, recitations and lectures, the object being to impart the scientific method of work and thought rather than to cram the student with a large number of unimportant facts. Courses in biology afford a desirable foundation for work in medicine, teaching, forestry, agriculture, sanitary and domestic science. The theoretical phases of biology have affected so many aspects of modern thought that elementary biology forms an essential part of a general culture course in college.

Three of the subjects in this department (4M, 5M, and 9) are given at the Medical School, 416–430 Huntington Avenue, Boston. These subjects may be taken by candidates for the bachelor's degree, and in this way students contemplating the study of medicine may anticipate one year of their medical course. Those who wish these subjects to count for the bachelor's degree must have previously taken at least Biology 1.

The department of biology has a large lecture room with adequate projection apparatus, and three large laboratories well equipped for undergraduate courses in biology. The department library has 13,000 books and pamphlets. The Barnum Museum contains valuable collections easily accessible to the students.

There is required from all students taking laboratory subjects a laboratory fee of four dollars and fifty cents a semester for each subject, payable in advance.

SUBJECTS

1. General Biology. *Two recitations and four hours of laboratory work. Counting as six term hours.* A course in the principles of animal and plant biology, presenting the fundamental facts of vital structure and function with special emphasis upon the vertebrates and flowering plants. Some conception of the evolution of plants and animals is given by the laboratory study of a series of types beginning with the unicellular. The student is advised to take field work in ornithology (Biology 13) in conjunction with Biology 1. PROFESSORS NEAL and LAMBERT

2. Morphology of Vertebrates. *Two lectures and four hours of laboratory work. Counting as six term hours.* PROFESSOR NEAL

Biology 2 will not be given in 1914–15.

3. Vertebrate Morphology. *Two lectures or recitations and four hours of laboratory work. Counting as six term hours.* A course in the phylogeny of man and mammals. The laboratory work consists largely of the dissection of the dogfish and cat. Each organ system is studied with reference to its development, anatomy and physiology. Text-book, Wilder's History of the Human Body. Open to all students who have completed Biology 1. PROFESSOR NEAL

4M. Human and Comparative Physiology. Lectures, recitations, conferences, and laboratory work. *Hours and credit to be arranged.* (S) Given at the Medical School. PROFESSOR DEARBORN

5M. Histology, Medical. Lectures, quizzes, and laboratory work. *Hours and credit to be arranged.* (F) Given at the Medical School.
PROFESSOR BATES

7. Botany. Lectures and laboratory work. *Two lectures and four hours of laboratory work. Counting as six term hours.* An advanced course in plant morphology and physiology, open to students who have taken Biology 1. PROFESSOR LAMBERT

8. Special Work. The investigation of some problem. *Hours and credits to be arranged.* Open to those who have taken three courses in biology.
PROFESSORS NEAL AND LAMBERT

9. Human Anatomy. Lectures, quizzes, and dissection. *Hours and credit to be arranged.* (F) Given at the Medical School.
PROFESSOR H. H. GERMAIN

[11. Microscopical Technique. A laboratory course designed to introduce the student to the methods used in the preparation of plant and animal tissues for the microscope. Open to students who have completed Biology 3 or 7. *Six hours of laboratory work. Counting as four term hours.*
PROFESSOR LAMBERT]

Will be given in 1914–15.

[12. Theoretical Biology. A reference reading and thesis course designed to introduce the student to some of the more important literature dealing with the scientific and philosophical problem of man's place in nature. A thesis based upon reference reading and dealing with the problem of the physical and mental evolution of man is required. Open to Seniors and Juniors who have taken Biology 1. *One lecture, one conference hour and four hours of reference reading. Counting as six term hours.* PROFESSOR NEAL]

Will be given in 1914–15.

13. Ornithology. A field and laboratory course in the study of our native birds. (S). To be taken in conjunction with Biology 1. *One three hour laboratory period or field trip a week. Counting as one term hour.*
PROFESSOR NEAL

54 GEOLOGY

PROFESSOR LANE

The subjects offered in the department of Geology do not form a sequence, but are intended to give different classes of students that knowledge of geology and mineralogy which they need. In all cases, they aim to include some real grasp upon the structure and history of the earth, the problems presented in the study thereof, and the modes of attack upon those problems.

The illustrative collections in these lines are ample. Besides exhibition specimens in the Barnum Museum, there is a working collection illustrating mineralogy, lithology, and dynamical and historical geology. These are supplemented with maps, diagrams, photographs, and lantern slides. The work in each subject consists of lectures and recitations, together with work in the laboratory and in the field. Excursions are taken to neighboring points that illustrate certain phenomena. Tufts College is well placed for field work and for the study of various natural processes.

SUBJECTS

1. Physical Geology and Geography. Primarily intended for Jackson students who may wish to teach Physical Geography in high schools. The text-books are Tarr (New Physical Geography) and Tarr & Von Engelin (Laboratory Manual of Physical Geography). A few lectures in geology will be given. There will be seven required Saturday afternoon excursions. *Hours to be arranged.* (S) PROFESSOR LANE

21. Physical Geography and Meteorology. Covers the reading and interpretation of topographic and weather maps and exercises thereon. (F) *Counting as one term hour.* PROFESSOR LANE

22. Physical Geology. Studies the processes which have left their records on the earth. Frequent excursions. (F) *Counting as two term hours.* PROFESSOR LANE

Subjects 21 or 22 cannot be taken separately, and together count as one laboratory course. A knowledge of Chemistry, Physics and Trigonometry is presupposed.

23. Economic Geology. The various natural sources of supply for man's needs and the economic and geologic principles governing their valuation and development. The instruction is chiefly by lectures and the work is mainly collateral reading. One book is required ($2.00). Either Mineralogy 64-1 or some Geological course is required. (S) *Counting as one term hour.* PROFESSOR LANE

24. Historical Geology. A study of the geological periods, with field excursions and laboratory work on fossils. (S) *Counting as two term hours.* PROFESSOR LANE

Geology 1, or 21 and 22 must precede; Biology 1 is helpful.

[3. Mathematical Problems presented to geologists. Conferences and critical reading of selected papers and original work. Mathematics 4 must precede Geology 3; Mathematics 6 must precede or accompany it. PROFESSOR LANE]

[4. Field Geology. Conference, one hour; field work, six hours a week; open to students who have taken Geology 24. *First part of first and last part of second half-year. Counting as three term hours.* PROFESSOR LANE]

64 MINERALOGY

Professor Lane would be glad to advise students wishing to take a thesis subject in Chemistry or Mathematics of geological, mineralogical or crystallographic interest.

1. Mineralogy and Lithology. (Pirrson.) Open to students who have taken Chemistry 1. *Two recitations and four hours of laboratory work. Counting as three term hours.* (F) PROFESSOR LANE

2. Crystallography and Advanced Mineralogy. Open to students who have taken Mineralogy 1. *Two lectures and four hours laboratory work and field excursions.* (S) *Counting as three term hours.* PROFESSOR LANE

THEOLOGY

All the subjects offered in the Theological School are open to election by qualified students in the School of Liberal Arts. For details see the announcement of the Crane Theological School.

38 MUSIC

PROFESSOR LEWIS

The department of Music offers opportunities to gain a knowledge of musical history and of the principles of composition, as a basis for practical work in music or in musical criticism. The subjects, Elements of Theory, Harmony, General History of Music, and Musical Appreciation may well be taken, however, by students who have no intention of preparing themselves for professional work in the art.

SUBJECTS

9. Musical Appreciation, Elementary. Systematic studies in musical essentials from the listener's standpoint. (F) PROFESSOR LEWIS

For Music 9 no technical preparation is requisite, but ability to recognize a melody is presupposed. Ability to follow a piano score is very helpful. Outside reading and laboratory study with automatic instruments are required. Music 9 is given in Tufts and Jackson in alternate years. In 1914–1915 it will be given in Jackson.

10. Musical Appreciation, Intermediate. A continuation of Music 9. (s) PROFESSOR LEWIS

[1. Elements of Theory. Lectures, practice, and analysis, with various text-books for reference. (F) PROFESSOR LEWIS]

Only acquaintance with musical notation and with the piano keyboard is required. Music 1 is introductory to Music 21.

[21. Harmony. Lectures and practical work, based on Chadwick's Manual of Harmony; collateral reading on biography and theory. (s) PROFESSOR LEWIS]

22. Advanced Harmony and Elementary Counterpoint. A continuation of Music 21. (F) PROFESSOR LEWIS

A full equivalent of Music 1 and 21 must have been done by students who wish to begin their college work with Music 22.

[3. Sight-reading in Song, and Harmonic Analysis. (s) PROFESSOR LEWIS]

Only those who have finished Music 22 may take Music 3. The harmonic analysis begun in Music 22 is continued, with special attention to the more difficult problems of modern music. Harmonic Analysis, by B. Cutter, and Melodia, by Cole and Lewis, are the text-books.

24. Counterpoint. Lectures and practical work, based on the manuals of Goetschius, Spalding, and others; collateral reading on biography and theory. (s) PROFESSOR LEWIS

Laboratory work with the automatic instruments is required.

[6. General History of Music, from the earliest times to the present day, with special attention to the period since the death of Palestrina. Lectures, with various treatises for reference. (s) PROFESSOR LEWIS]

25. Studies in one or more of the following subjects: Canon, Fugue, Orchestration, Form, Free composition, Musical History, Musical Criticism. PROFESSOR LEWIS

The studies may be directed by lectures, or may consist of individual work of students under the supervision of the instructor. Requirements as to previous studies in Music and in foreign languages will be given on application to the instructor.

88 PHYSICAL EDUCATION

E. S. KRANTZ, Director

The aim of the department is to secure the interest and participation of the students in such exercises and training as they need for corrective, hygienic, and recreative purposes.

The object of the work is recreative and its purpose is to give the student such knowledge of the structure and composition of the human body as will enable him to understand its functions and keep it in good condition and symmetrical development. These objects are sought by lectures on anatomy, physiology and personal hygiene, regular class exercises, accompanied by music, in the gymnasium during the winter, and by out-door exercise in the spring, when the weather is suitable. A medical examination is given and physical measurements and strength tests of all students are taken at the beginning and the end of the gymnasium course, and at other times when necessary. These enable the instructor to prescribe special exercises to overcome defects. There is connected with the gymnasium a special room fitted out with all the modern apparatus for the development of weak muscles and the correction of deformities. Students may also receive personal advice with reference to habits of life.

Weekly lectures on hygiene are given during the first term of the Freshman year. These lectures are given by apt, tactful men; leaders in their professions, who are especially chosen for their capability. Outdoor competitive games in spring and fall, and indoor exercise—calisthenics; Swedish work; Indian club; wand, and dumb-bell drills; apparatus, boxing wrestling, and hand-ball—is required two hours a week, from October to May, of all undergraduate students, for the first two years following entrance. Participation in any one of the organized sports may be substituted for the required work, except hygiene, for the time of such participation. The work is optional the remaining years of the course.

The intention of the department is to make physical training of such character that the weakest as well as the strongest can engage in it with profit. Recognizing the fact that muscular exercise, without the coöperation of the mind, fails of its intent and purpose, the work is made largely recreative.

ELECTIVE PHYSICAL EDUCATION

An advanced course in the Swedish system, including theory and practice, the teaching of gymnastics, graduation of exercises, gymnasium management, advanced drill and apparatus work is given. A thorough and complete course in "first aid," including the resuscitation of the nearly drowned is offered. A special class in rhythmic, gymnastic dancing, including all gymnastic and folk dances is open to upper-classmen.

Time-Schedule for the year of 1913-14

(Subject to Revision)

SCHOOL OF LIBERAL ARTS AND JACKSON COLLEGE

The hour for the Tufts division is indicated by the letter T; for the Jackson division by J. Initials are used for the days of the week, thus: *MWF*, Monday, Wednesday, and Friday; *TTS*, Tuesday, Thursday, and Saturday. The numeral following these letters indicates the program-hour, not the time of day. The working day is divided into eight periods, beginning respectively at 8.00, 8.50, 9.50, 11.10, 12.10, 2.10, 3.10, and 4.10; and the hours are numbered in that order. Thus, *MWF 2* means 8.50 on the respective days; *TTS 4* means 11.10, etc.

Subjects that continue through only one half-year are indicated by letters in parenthesis, thus: (F) means "first half-year," (S) means "second half-year." Subjects not so indicated extend through both terms.

12-1 (F) English T *TTS 2;* J *TTS 4*
12-2 (S) English T *TTS 2;* J *TTS 4*
12-11 Eng. Lit. T *MWF 2;* J *MWF 5*
12-17 (F) Shakespeare T J *MWF 2*
12-18 (S) Shakespeare T J *MWF 2*
12-24 (F) Poetry 19th Century T J *MWF 4*
12-25 Development of Drama T J *TTS 4*
12-29 Seminar T J *TT 67*
12-34 Tennyson and Browning T J *MWF 3*
12-36 (S) Carlyle *To be arranged*
18-1 (S) Oratory *To be arranged*
22-1 German T *MWF 4;* J *MWF 5*
22-2 German T *MWF 3;* J *TTS 3*
22-3 German T *MWF 4;* J *TTS 2*
22-3A German *To be arranged*
22-3B German T J *TTS 5*
22-4 German T J *MWF 5*
22-5 German T J *MWF 7*
22-6 German *To be arranged*
32-1 French T J *MWF 4*
32-2 French T *MWF 3;* J *MWF 7*
32-3 French T J *MWF 6*
32-3B French T J *TTS 5*
32-4 French T J *TTS 3*
32-5 French T J *TTS 2*
32-6 French *To be arranged*
52-1 Latin T *MWF 7;* J *MWF 2*
52-2 Latin T J *TTS 4*
52-4 Latin T J *TTS 3*
52-5 Latin T J *Tu 6*
52-6 Latin T J *Th* 2
62-1 Greek *To be arranged*
62-2 Greek *To be arranged*
62-3 Greek *To be arranged*
62-5 Greek *To be arranged*
62-6 Greek *To be arranged*
62-7 Greek *To be arranged*
28-1 (F) Class. Arch. T J *MWF 4*
28-2 (S) Class. Arch. T J *MWF 4*
28-7 (F) Greek Hist. T J *MWF 5*
28-8 (S) Roman Hist. T J *MWF 5*
16-1 (F) Philosophy T J *TTS 4*
16-2 (S) Philosophy T J *TTS 4*
16-3 (F) Philosophy T J *MWF 4*
16-4 (S) Philosophy T J *MWF 4*
16-55 Psychology T J *MWF 2*

16-6 (F) Ethics-Theory T J *TTS 5*
16-7 (S) Ethics App. T J *TTS 5*
16-8 (F) Ethics-Historical *To be arranged*
16-15 Philosophy T J *TTS 3*
26-1 (F) Education T J *TTS 3*
36-1 History T *MWF 5;* J *TTS 4*
36-2 History T J *MWF 2*
36-3 History T J *MWF 4*
36-19 (F) History T J *TTS 3*
36-20 (S) History T J *TTS 3*
36-15 History *To be arranged*
46-1 (F) Hist. and Pub. Law T J *MWF 3*
46-8 (S) Hist. and Pub. Law T J *MWF 3*
46-3 (S) Hist. and Pub. Law T J *MWF 4*
66-1 Pol. Science T J *MWF 3*
66-13 (S) Sociology *To be arranged*
66-4 (F) Pol. Science T J *MWF 4*
66-5 (S) Pol. Science T J *MWF 4*
66-6 (F) Pol. Science T J *MWF 2*
66-16 (S) Pol. Science T J *MWF 2*
66–10 (F) Pol. Science T J *MWF* 5
66-17 Pol. Science T J *TTS 2*
66-7 (S) Pol. Science *To be arranged*
66-9 Pol. Science *To be arranged*
14-3 (F) Trig. T *MWF 2* and *5;* J *MWF 3*
14-1 (S) Algebra T *MWF 2* and *5;* J *MWF 3*
14-2 (S) Solid Geom. T J *MWF 5*
14-4 (F) Anal. Geom. T J *TTS 4*
14-5 (S) Math. T J *TTS 4*
14-6 (F) Math. T J *TTS 4*
14-7 (S) Math. *To be arranged*
14-8 (S) Math. *To be arranged*
14-9 (F) Math. *To be arranged*
14-10 (S) Math. *To be arranged*
14-12 (F) Math. T J *TTS 1*
14-14 (F) Math. *To be arranged*
24-1 Physics T *TTS 4;* J *TTS 2*
24-21 Physics T J *TT 7*
24-7 Physics Lab. T J *W 678*
24-2 (S) Physics *To be arranged*
24-6 (S) Physics *To be arranged*
24-11 (F) Physics *To be arranged*
24-17 Physics *To be arranged*
34-1 Chemistry T J *Tu 5678 Th 5*
35-2 (F) Qual. Anal. T J *MF 123* or *678*
35-3 (S) Qual. Anal. T J *MF 678*
34-4 Quan. Anal. T J *TTS 123*
34-5 Quan. Anal. T J *TTS 123*
34-7 (S) Fire Assay T J *MF 678*
34-8 (S) Metallurgy T J *WF 4*
34-9 (F) Gas Anal. T J *F 123*
35-10 Org. Chem. T J *TTS 5; W 123*
34-11 Chemistry T J *MF 5; W 123*
34-12 (F) Chemistry *To be arranged*
34-17 Chemistry T J *TT 8; M 123*
34-16 Chemistry *To be arranged*
34-19 (F) Chemistry *To be arranged*
44-1 Biology T J *TT 567*
44-2 Biology T J *MF 123*
44-3 Biology T J *TT 123*
44-6 (F) or (S) Biology *To be arranged*
44-7 Botany *To be arranged*
44-8 Biology *To be arranged*
44-13 (S) Biology *To be arranged*
54-1 (S) Geology *To be arranged*
54-21 (F) Geology T J *W 5*
54-22 (F) Phys. Geology T J *W 678; F 6*
54-23 (S) Econ. Geology T J *W 5*
54-24 (S) Hist. Geology T J *W 678; F 6*
64-1 (F) Mineralogy T J *MW 4; TT 67*
64-2 (S) Mineralogy *To be arranged*
38-9 (F) Music T *TTS 5;* J *TTS 2*
38-10 (S) Music T *TTS 5;* J *TTS 2*
38-22 (F) Music *To be arranged*
38-24 (S) Music *To be arranged*
38-25 Music *To be arranged*

ENGINEERING SCHOOL

Faculty of the Engineering School

	Residence*
WILLIAM L. HOOPER, A.M., Ph.D., Acting President, *and Professor of Electrical Engineering*	124 Professors Row
GARDNER C. ANTHONY, A.M., Sc.D., Dean *Professor of Technical Drawing. Acting Head of Department of Mechanical Engineering*	14 Professors Row
WILLIAM H. REED, Jr., A.M., Secretary *Assistant Professor of Modern Languages*	81 Walnut Ave., Roxbury
ALFRED C. LANE, A.M., Ph.D., Sc.D. *Pearson Professor of Geology and Mineralogy*	1775 Massachusetts Ave., Cambridge
FRANK B. SANBORN, C.E., M.S. *Professor of Civil Engineering*	8 Buena Vista Park, Cambridge
FRANK W. DURKEE, A.M. *Professor of Inorganic Chemistry*	38 Professors Row
EDWARD H. ROCKWELL, S.B. *Professor of Structural Engineering*	133 Powder House Boulevard, W. Somerville
CHARLES H. CHASE, S.B. *Professor of Steam Engineering*	39 Lincoln St., Stoneham
SAMUEL C. EARLE, A.M. *Professor of English*	45 Sawyer Avenue
HENRY C. METCALF, A.B., Ph.D. *Jackson Professor of Political Science*	31 Sheffield Road, Winchester
SAMUEL L. CONNER, B.S., M.S *Assistant Professor of Railroad Engineering*	23 Bellevue St.
WILLIAM R. RANSOM, A.M. *Professor of Mathematics*	29 Sawyer Avenue
GEORGE F. ASHLEY *Assistant Professor of Technical Drawing*	47 Avon St., Somerville
EDWIN B. ROLLINS, B.S. *Assistant Professor of Electrical Engineering*	38 Capen St.

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*The post office address is Tufts College, Mass., unless otherwise indicated.

PHILIP H. COBB, A.B., PH.D. . . . . Dean Hall, 5
Assistant Professor of Organic and Physical Chemistry

MELVILLE S. MUNRO, B.S. . . . . 101 Talbot Avenue
Assistant Professor of Electrical Engineering

FRANK E. SEAVEY, A.B. . . . . 45 Sawyer Ave.
Assistant Professor of English

HENRY H. MARVIN, B.S., PH.D. . . . . 59 West Adams St.
Assistant Professor of Physics

RICHARD C. SMITH, B.S. . . . . 15 Warren St., W. Medford
Assistant Professor of Structural Engineering

ALEXANDER DILLINGHAM, A.M. . . . . 54 Curtis Ave.
Assistant Professor of Mathematics

FRANK W. POTE, B.S. . . . . 9 Marshall St., Medford
Instructor in Physics

HOWARD H. CARROLL, S.B. . . . . . . 66 Wyman St., W. Medford
Instructor in Technical Drawing.

ELLSWORTH S. KRANTZ, B.P.E. . . . . Paige Hall, 24
Instructor in Physical Education and Director of the Gymnasium

CONRAD A. ADAMS, B.S. . . . . . 38 Whitfield Rd., West Somerville
Instructor in Mechanic Arts

NATHANIEL H. KNIGHT, B.S. . . . . 65 Pearson Rd.
Instructor in Physics

PRENTICE W. TOWSLEY, B.S. . . . 74 Mt. Vernon St., Somerville
Walker Special Instructor in Mathematics and Instructor in Structural Engineering

CROSBY F. BAKER, M.S. . . . . East Hall, 10
Instructor in Chemistry

MERRILL C. HILL, A.B. . . . . West Hall, 17
Instructor in Modern Languages

CHARLES GOTT, A.B. . . . . Dean Hall, 6
Instructor in English

HARRY P. BURDEN, B.S. . . . . 22 Fairmount St.
Instructor in Civil Engineering

COMMITTEE ON PROMOTIONS

Dean Anthony, *Chairman;* Professors Durkee, Rockwell, and Assistant Professors Ashley and Rollins.

CONMITTEE ON CURRICULUM

Dean Anthony, *Chairman;* Professors Hooper, Sanborn, Durkee, Rockwell, Chase, and Earle.

OTHER OFFICERS

EUGENE E. SHEPARD . . . . W. Medford
Bursar

LESLIE N. GEBHARD . . . . 55 Fremont Ave., Everett
Secretary to the Dean of the Engineering School

MASON E. BENNETT . . . . 71 School St., Somerville
Clerk in the Engineering School

Courses of Instruction

The School offers courses in Civil Engineering, Structural Engineering, Mechanical Engineering, Electrical Engineering, and Chemical Engineering, each leading to the degree of Bachelor of Science, and requiring four years of study.

While much of the instruction is of a technical character relating to the several branches of engineering, the first aim of the School is toward a broad intellectual development, and an appreciation of the duties of the educated man. An effective correlation of the subjects serves to promote a great degree of unity and to secure an educational result both scientific and cultural.

During the first two years the course of study and elective privileges are the same for all departments. The importance of developing the power to write clear and concise English is emphasized by correlating this subject with the work of other departments, thus making it as much a fundamental for technical training as it is for a literary education. The required courses in Mathematics, Physics, and Chemistry, common to every field of engineering, are studied during this period, thus preparing the student for the applied subjects which characterize the work of the Junior and Senior years. A thorough course in the theory and practice of Technical Drawing and of Mechanic Arts is required in all departments during the first two years.

One hundred and forty term hours are required for graduation, this being the equivalent of about fifty-two hours of work per week. One term hour signifies one recitation per week for one term, or one laboratory period of three hours for a term, the recitation period implying two hours of preparation. A grade of C or higher must be obtained in at least 70 term hours.

On the pages immediately following the Courses of Instruction will be found an index of the subjects, which gives a complete view of the system of numbering. The figures following the names of subjects represent the credit in term hours.

Following this index will be found detailed descriptions of the subjects in numerical order.

Permission to take a program in excess of eighteen term hours, except when required by the curriculum, must be obtained by petition to the Committee on Promotions.

FRESHMAN YEAR

[Alike for all courses.]

FIRST TERM			SECOND TERM		
11-1	English	3	11-2	English	3
13-2	†French or	3	13-2	†French or	3
15-2	†German		15-2	†German	
21-1	Drawing	5	21-5	Descriptive Geometry	3
29-1	Mathematics	3	25-1	Mechanic Arts	3
29-2	Mathematics	3	29-3	Mathematics	3
88	Physical Training	½	31-1	Physics	3
			88	Physical Training	½
	Total	17½		Total	18½

SOPHOMORE YEAR

[Alike for all courses.]

FIRST TERM			SECOND TERM		
21-8	Drawing	3	21-13	Mechanism	3
29-4	Mathematics	3	29-5	Mathematics	3
31-2	Physics	3	31-7	Physical Laboratory	1½
31-7	Physical Laboratory	1½	35-1	Chemistry	3
35-1	Chemistry	3	41-3	Surveying	2
41-3	Surveying	1	45-21	Mechanics	3
88	Physical Training	½	88	Physical Training	½
	Total	15		Total	16

Electives	*Electives*
English, or subjects in other departments, subject to approval.	English, or subjects in other departments, subject to approval.

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† As the course to be pursued in modern language is dependent on the preparation of each student, definite instruction for the selection thereof is given at the time of registration.

CIVIL ENGINEERING

The Civil Engineering graduates enter a great variety of positions. Their work may include municipal engineering, general surveying, water-supplies, sewerage, water-powers, bridges, mill buildings, fire protection, foundations, electric railroads, steam railroads, highways, or contracts and specifications; and these positions may require drafting, computations, or field construction. It therefore becomes the duty of the Department to qualify its students for various fields of employment. The basis of instruction is general engineering education and not specialization. In fact it is recommended that those students who find that they would like to specialize should plan to do so by a graduate year of study after their four years of general engineering education in the Civil Engineering course.

By referring to the detailed list of studies published on another page of this catalogue, it may be seen, however, that a student can select for his Senior year elective studies and a thesis which will give him opportunity to devote most of the year to his chosen field in railroads, hydraulics, or municipal engineering.

In order that the student may observe a direct application of the theory that he is studying, the Department conducts many laboratory and field courses. These include field practice in topographical and railroad surveying (for which the college location affords excellent advantages), river gaugings, and laboratory tests of metals, cements, road materials, and hydraulic appliances, beside trips of inspection, and tests at near-by industrial or municipal plants. This close association of theory and practice adds to the interest and progress of the student.

CIVIL ENGINEERING

JUNIOR YEAR

First Term			Second Term		
35-2	Qualitative Analysis	2	41-13	Railroad Engineering	3
41-12	Railroad Surveying	3	41-21	Highways	2
41 40	Hydraulics	3	41-43	Hydraulic Measurements	2
45-1	Applied Mechanics	3	45-2	Applied Mechanics	3
45-12	Applied Mechanics Laboratory	1	47-3	Structural Design	3
51-1	Steam Engine	3	81-2	Economics	3
81-2	Economics	3			
	Total	18		Total	16
	Electives			*Electives*	
11-	English		11-	English	
14-	Mathematics		14-	Mathematics	
61-3	Dynamo-Electric Machinery	3	51-3	Engineering Thermodynamics	3
64-1	Mineralogy				

SENIOR YEAR

First Term			Second Term		
41-14	Railroad Engineering	3	41-48	Sewerage	3
41-46	Water Supplies	3	41-99	Thesis	3-5
45-3	Structural Mechanics	3			
47-1	Roofs and Bridges	3			
	Total	12		Total	6-8
	Electives			*Electives*	
11-	English		11-	English	
14-	Mathematics		14-	Mathematics	
[17-1	Spanish	3]	[17-1	Spanish	3]
35-18	Chemistry of Road-building Materials	3	35-18	Chemistry of Road-building Materials	3
41-31	Geodesy	2	41-17	Railroad Economics	3
41-47	Water Power Engineering	3	41-51	Fire Protection Engineering	2
41-95	Civil Engineering Topics	2	41-63	Contracts	3
47-7	Bridge Design	3	47-2	Theory of Structures	3
61-3	Dynamo-Electric Machinery	3	47-8	Structural Design	2
64-	Mineralogy		54-1	Geology	3
66-	Economics		61-10	Electrical Laboratory	2
			66-	Economics	

STRUCTURAL ENGINEERING

The course of instruction in Structural Engineering is arranged so as to afford the student a comprehensive training in the fundamentals of civil engineering construction, and leads to the degree of Bachelor of Science in Civil Engineering. In addition to the subjects of the first two years, the course includes, as prescribed subjects, applied mechanics; testing of the materials of construction; stresses in framed structures; design of masonry and reinforced concrete structures and foundations; the design of buildings and bridges; hydraulics; sanitary engineering; steam engine; railroad surveying and economics. In addition to the prescribed subjects, it is possible for the student to elect courses in English, Spanish, mineralogy, geology, geodesy, contracts, dynamo electric machinery, highways, hydraulic engineering, railroad engineering, and advanced courses in mathematics.

The distinctive work of the course, however, is based upon the principles involved in the theory of structures, and in their design and construction. The study of this subject is commenced at the beginning of the junior year and is carried through two full years without intermission, partly in order to develop the power of concentration by the continued study of a highly mathematical and scientific body of co-ordinated principles, and partly because these same principles happen to be fundamental and therefore necessary for a complete understanding of civil engineering structures.

Special emphasis is laid upon the design by the student of typical structures which are likely to be met in practice. By this means he fixes in mind the principles of mechanics and obtains a truer perspective of their application for stability, safety, and economy of construction. The course is designed as an educational preparation not only for those who expect to follow construction professionally as engineers, but for others who may eventually be connected with public or private works as designers, inspectors or in administrative capacities.

STRUCTURAL ENGINEERING

JUNIOR YEAR

FIRST TERM

35-2	Qualitative Analysis	2
41-12	Railroad Surveying	3
41-40	Hydraulics	3
45-1	Applied Mechanics	3
45-12	Applied Mechanics Laboratory	1
51-1	Steam Engine	3
81-2	Economics	3
	Total	18

Electives

11-	English	
14-	Mathematics	
61-3	Dynamo-Electric Machinery	3

SECOND TERM

41-43	Hydraulic Measurements	2
45-2	Applied Mechanics	3
47-3	Structural Design	3
81-2	Economics	3
	Total	11

Electives

11-	English	
14-	Mathematics	
24-2	Electricity and Magnetism	3
41-13	Railroad Engineering	3
41-21	Highways	2
51-3	Engineering Thermodynamics	3
51-13	Mechanics of Machinery	3
61-10	Electrical Laboratory	2

SENIOR YEAR

FIRST TERM

41-46	Water Supplies	3
45-3	Structural Mechanics	3
47-1	Roofs and Bridges	3
47-7	Bridge Design	3
47-95	Structural Topics and Reports	2
	Total	14

Electives

11-	English	
14-	Mathematics	
[17-1	Spanish	3]
41-14	Railroad Engineering	3
41-21	Highways	2
41-31	Geodesy	2
41-47	Water Power Engineering	3
61-3	Dynamo-Electric Machinery	3
64-1	Mineralogy	
66-	Economics	

SECOND TERM

47-2	Theory of Structures	3
47-8	Structural Design	2
47-99	Thesis	3-5
	Total	8-10

Electives

11-	English	
14-	Mathematics	
[17-1	Spanish	3]
41-17	Railroad Economics	3
41-48	Sewerage	3
41-51	Fire Protection Engineering	2
41-63	Contracts	3
54-1	Geology	3
61-10	Electrical Laboratory	2
66-	Economics	

ELECTRICAL ENGINEERING

The aim of this course is to lay a broad foundation of Electrical Science upon which the future technical attainments of the electrical engineer may rest.

The purely electrical work extends throughout the junior and senior years; that in the junior year being devoted to the more elementary theory, and the practice of the simpler tests and measurements, while that in the senior year is largely directed to the more advanced study of alternating currents and electrical machinery and to the more complicated tests of the alternating current and dynamo laboratories, and to the consideration of the general problems of Electrical Engineering.

Throughout the course much attention is paid to the numerical solution of electrical problems, as it is believed that in no other way can theory and principles be so quickly and so clearly comprehended. A considerable amount of time is given to the design of electrical apparatus and machinery and many students during their course construct or assist in the construction of some instrument or piece of electrical machinery of commercial finish and dimensions.

The graduates of this course are advised to spend a couple of years in the apprenticeship courses or testing departments of the large electrical manufacturing companies in order that they may get an intimate practical acquaintance with electrical apparatus and experience in handling and operating heavy machinery.

Everywhere the attempt is made to present the data and methods of Electrical Engineering by the scientific development of physical principles, it being assumed that the empirical side of the profession may best be acquired by practice after graduation.

ELECTRICAL ENGINEERING

JUNIOR YEAR

FIRST TERM

35-2	Qualitative Analysis	2
45-1	Applied Mechanics	3
45-12	Applied Mechanics Laboratory	1
51-1	Steam Engine	3
61-3	Dynamo-Electric Machinery	3
81-2	Economics	3
	Total	15

Electives

11-	English	
14-	Mathematics	
25-8	Mechanic Arts	3

SECOND TERM

41-40	Hydraulics	3
45-2	Applied Mechanics	3
61-4	Electrical Laboratory	4
61-5	Alt. Current Machinery	3
81-2	Economics	3
	Total	16

Electives

11-	English	
14-	Mathematics	3
24-2	Electricity and Magnetism	3
51-3	Engineering Thermodynamics	3
51-13	Mechanics of Machinery	3
51-21	Mechanical Engineering Lab.	2

SENIOR YEAR

FIRST TERM

61-7	Dynamo Laboratory	4
61-11	Alternating Currents	3
61-15	Electrical Engineering	3
61-21	Dynamo Design D. C.	3
	Total	13

Electives

11-	English	
14-	Mathematics	
[17-1	Spanish	3]
25-8	Mechanic Arts	3
41-47	Water Power Engineering	3
45-3	Structural Mechanics	3
51-17	Machine Design	3
61-17	Telephone and Telegraph	3
66-	Economics	

SECOND TERM

61-16	Electrical Engineering	3
61-99	Thesis	3-5
	Total	6-8

Electives

11-	English	
14-	Mathematics	
[17-1	Spanish	3]
41-63	Contracts	3
61-22	Dynamo Design A. C.	3
61-95	Electrical Topics	3
66-	Economics	

MECHANICAL ENGINEERING

The course of instruction in mechanical engineering relates particularly to the generation and transmission of power; the design and construction of machinery; the economics of production and labor.

The subject of steam is begun with the Junior year and continued through the Senior year, giving full consideration to the mechanical theory of heat and the properties of steam and gases, based on the preparatory courses in physics and chemistry. It comprises the study of steam engines and boilers, together with their auxiliaries, by text book, laboratory tests, and design. Gas producers, gas engines, and turbines are also given the attention which their importance demands. Both required and elective courses in Electricity are given at the same time, thus giving the student a comprehensive treatment of the power problem.

The subject of mechanism is introduced in the Sophomore year and followed by the mechanics and dynamics of machinery in the Junior and Senior years. These courses are paralleled by laboratory practice and a thorough training in applied mechanics and the testing of materials. The courses in design are closely correlated with the development of theory, and supplemented by shop practice and many inspection trips to the industrial plants in the vicinity,

The third and equally important division of this course is the consideration of problems relating to the manufacture of machinery. This comprises the economic methods of production, and the consideration of labor problems. These subjects will be presented to the prospective engineer in such form as to enable him to comprehend their importance and the principles involved.

The course aims to give the graduate a thorough knowledge of the fundamentals in mechanical engineering so that he may successfully cope with the problems in the shop and engineering office, the power plant, or in factory organization and administrative engineering.

MECHANICAL ENGINEERING

JUNIOR YEAR

	FIRST TERM			SECOND TERM	
25-8	Mechanic Arts	3	41-40	Hydraulics	3
35-2	Qualitative Analysis	2	45-2	Applied Mechanics	3
45-1	Applied Mechanics	3	51-3	Engineering Thermodynamics	3
45-12	Applied Mechanics Laboratory	1	51-13	Mechanics of Machinery	3
51-1	Steam Engine	3	51-21	Mechanical Engineering Lab.	2
81-2	Economics	3	81-2	Economics	3
	Total	15		Total	17
	Electives			*Electives*	
11-	English		11-	English	
14-	Mathematics		14-	Mathematics	
61-3	Dynamo-Electric Machinery	3	24-2	Electricity and Magnetism	3
			61-5	Alt. Current Machinery	3
			61-10	Electrical Laboratory	2

SENIOR YEAR

	FIRST TERM			SECOND TERM	
51-7	Engine Design	3	51-8	Power Plant Design	3
51-15	Dynamics of Machinery	3	51-19	Production Engineering	3
51-17	Machine Design	3	51-28	Mechanical Engineering Lab.	3
51-26	Mechanical Engineering Lab.	3	51-99	Thesis	3
	Total	12		Total	12
	Electives			*Electives*	
11-	English		11-	English	
14-	Mathematics	3	14-	Mathematics	
41-47	Water Power Engineering	3	41-51	Fire Protection Engineering	2
45-3	Structural Mechanics	3	41-63	Contracts	3
47-1	Roofs and Bridges	3	51-96	Mech. Engineering Topics	3
61-3	Dynamo-Electric Machinery	3	61-5	Alt. Current Machinery	3
61-21	Dynamo Design D. C	3	61-10	Electrical Laboratory	2
66-	Economics	3	66-	Economics	3

CHEMICAL ENGINEERING

The course in Chemical Engineering covers a period of four years, and leads to the degree of Bachelor of Science in Chemical Engineering.

The subjects in this course have been arranged to give the training in mathematics, physics, chemistry, and mechanical and electrical engineering that will assist the graduates of the department in solving the mechanical, electrical and chemical problems that present themselves when chemistry is applied in practical ways. Subjects intended for general training, the greater part of the pure mathematics, and the less technical engineering subjects have purposely been introduced early in the course. This arrangement allows much time for the study of subjects in chemistry and advanced engineering in the last two years. The mathematical, physical, and general engineering subjects, as well as subjects that are intended for general culture, correspond, for the most part, to those of the course in mechanical and electrical engineering.

In chemistry the subjects are numerous enough to train the student thoroughly in theoretical and descriptive inorganic and organic chemistry, to give him a working knowledge of the different branches of chemical analysis, and to make him familiar with many of the practical applications of chemistry. The chemical and engineering subjects are taught, so far as it is possible, in the laboratories, and excursions are made from time to time to plants where technical chemical operations are performed.

Young men who graduate from the course in chemical engineering find employment in constructing and operating plants where chemistry is applied commercially, such as gas-works, dye-works, bleacheries, paper and pulp mills, acid and alkali manufactories, and analytical laboratories.

CHEMICAL ENGINEERING

JUNIOR YEAR

FIRST TERM			SECOND TERM		
35-2	Qualitative Analysis	2	35-3	Qualitative Analysis	2
35-4	Quantitative Analysis	3	35-4	Quantitative Analysis	3
35-10	Organic Chemistry	4	35-10	Organic Chemistry	4
45-1	Applied Mechanics	3	41-40	Hydraulics	3
45-12	Applied Mechanics Laboratory	1	45-2	Applied Mechanics	3
51-1	Steam Engine	3	81-2	Economics	3
81-2	Economics	3			
	Total	19		Total	18
	Electives			*Electives*	
11-	English		11-	English	
14-	Mathematics		14-	Mathematics	
	German 15 or 22	3		German 15 or 22	3
			24-2	Electricity and Magnetism	3

SENIOR YEAR

FIRST TERM			SECOND TERM		
35-5	Quantitative Analysis	3	35-5	Quantitative Analysis	3
35-9	Gas Analysis	1	35-7	Fire Assay	2
35-11	Theoretical Chemistry	3	35-8	Metallurgy	2
35-17	Applied Chemistry	3	35-11	Theoretical Chemistry	3
61-3	Dynamo-Electric Machinery	3	35-17	Applied Chemistry	3
			35-99	Thesis	3-5
	Total	13		Total	16-18
	Electives			*Electives*	
11-	English		11-	English	
14-	Mathematics		14-	Mathematics	
	German 15 or 22	3		German 15 or 22	3
[17-1	Spanish	3]	[17-1	Spanish	3]
41-46	Water Supplies	3	41-48	Sewerage	3
54-	Geology		54-	Geology	
64-1	Mineralogy		61-10	Electrical Laboratory	2
66-	Economics		66-	Economics	

Index to Subjects

11 ENGLISH

No.	Term Hours	Subject
11-1	3	English (First Term)
11-2	3	English (Second Term)
11-4	2	Narration
11-5	3	General English Literature
11-6	2	English Literature, 19th Century
11-7	2	Advanced English Literature
11-8	2	Technical Exposition
11-9	2	Technical Theses
11-13	3	Argumentation

13 FRENCH

No.	Term Hours	Subject
13-1	*6	French
13-2	*6	French

15 GERMAN

No.	Term Hours	Subject
15-2	*6	German

17 SPANISH

No.	Term Hours	Subject
17-1	*6	Spanish

21 DRAWING

No.	Term Hours	Subject
21-1	5	Drawing
21-5	3	Descriptive Geometry
21-8	3	Drawing
21-13	3	Mechanism

25 MECHANIC ARTS

No.	Term Hours	Subject
25-1	3	Pattern Making
25-8	3	Metal Work

29 MATHEMATICS

No.	Term Hours	Subject
29-1	3	Computation
29-2	3	Analytical Geometry and Algebra
29-3	3	Freshman Calculus
29-4	3	Sophomore Calculus
29-5	3	Sophomore Calculus

31 PHYSICS

No.	Term Hours	Subject
31-1	3	Mechanics and Sound
31-2	3	Electricity and Magnetism, and Light
31-7	§3	Physical Laboratory

35 CHEMISTRY

No.	Term Hours	Subject
35-1	*6	General Inorganic Chemistry
35-2	2	Qualitative Analysis
35-3	2	Qualitative Analysis, Advanced
35-4	*6	Quantitative Analysis
35-5	*6	Quantitative Analysis, Technical
35-7	2	Fire Assay
35-8	2	Metallurgy of Iron and Steel
35-9	1	Technical Gas Analysis
35-10	‖8	Organic Chemistry
35-11	*6	Theoretical Chemistry
35-17	*6	Applied Chemistry
35-18	*6	Chemistry of Road-building Materials
35-99	3-5	Chemical Engineering Thesis

41 CIVIL ENGINEERING

No.	Term Hours	Subject
41-3	†3	Surveying
41-12	3	Railroad Surveying
41-13	3	Railroad Engineering
41-14	3	Railroad Engineering
41-17	3	Railroad Engineering Economics
41-21	2	Highways and Cements
41-31	2	Geodesy
41-40	3	Hydraulics
41-43	2	Hydraulic Measurements
41-46	3	Water Supplies
41-47	3	Water Power Engineering
41-48	3	Sewerage
41-51	2	Fire Protection Engineering
41-63	3	Contracts
41-95	2	Civil Engineering Topics
41-99	3-5	Civil Engineering Thesis

45 APPLIED MECHANICS

No.	Term Hours	Subject
45-1	3	Applied Mechanics
45-2	3	Applied Mechanics
45-3	3	Structural Mechanics
45-12	1	Applied Mechanics Laboratory
45-21	3	Mechanics

47 STRUCTURAL ENGINEERING

No.	Term Hours	Subject
47-1	3	Roofs and Bridges
47-2	3	Theory of Structures
47-3	3	Structural Design, Elementary
47-7	3	Bridge Design
47-8	2	Structural Design, Advanced
47-95	2	Structural Topics and Reports
47-99	3-5	Structural Engineering Thesis

51 MECHANICAL ENGINEERING

No.	Term Hours	Subject
51-1	3	Steam Engine
51-3	3	Thermodynamics
51-7	3	Engine Design
51-8	3	Power Plant Design
51-13	3	Mechanics of Machinery
51-15	3	Dynamics of Machinery
51-17	3	Machine Design
51-21	2	Mechanical Engineering Laboratory
51-26	3	Mechanical Engineering Laboratory
51-28	3	Mechanical Engineering Laboratory
51-96	3	Mechanical Engineering Topics
51-99	3	Mechanical Engineering Thesis

54 GEOLOGY

No.	Term Hours	Subject
54-1	3	Physical Geology and Geography
54-21	1	Physical Geography and Meteorology

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* Two terms; three term hours each.
† Two terms; first term, one term hour; second term, two term hours.
‖ Two terms; four term hours each.
§ Two terms; one and one-half term hours each.

54 GEOLOGY (Continued)

54-22	2	Physical Geology
54-23	1	Economic Geology
54-24	2	Historical Geology

61 ELECTRICAL ENGINEERING

61-3	3	Dynamo-Electric Machinery
61-4	4	Electrical Laboratory
61-5	3	Alternating Current Machinery
61-7	4	Dynamo Laboratory
61-10	2	Electrical Laboratory
61-11	3	Alternating Currents
61-15	3	Electrical Engineering
61-16	3	Electrical Engineering
61-17	3	Telephone and Telegraph
61-21	3	Dynamo Design, D. C.
61-22	3	Dynamo Design, A. C.
61-95	3	Electrical Topics
61-99	3-5	Electrical Engineering Thesis

64 MINERALOGY

64-1	3	Mineralogy and Lithology
64-2	3	Crystallography and Descriptive Mineralogy

81 POLITICAL ECONOMY

81-2	*6	Elements of Economics
66-5	3	Money, Credit, and Banking
66-6	3	Modern Industrial Combinations
66-16	3	Modern Labor Problems
66-17	3	Industrial Organization and Management

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* Two terms; three term hours each.

Examination Group System

The courses are divided into six groups. Each of these groups has assigned to it three periods of four days each for each half year, during which periods all announced examinations in the courses of that group are given. These examinations are limited to the time assigned to these subjects on the program.

Composition of groups and periods allotted to each are as follows:

FIRST HALF-YEAR

Subject	Group	Subject	Group	Subject	Group	Subject	Group
11-1	5	31-2	6	41-14	5	51-15	1
11-5	3	31-7	3	41-31	4	51-17	3
11-7	3	35-1	1	41-40	5	51-31	5
11-9		35-2	4	41-46	6	51-95	3
11-13	5	35-4	1	41-47	2	61-3	5
13-1	6	35-5	1	41-95	3	61-7	5
13-2	6	35-9	4	45-1	1	61-11	6
15-2	6	35-10	5	45-3	1	61-15	3
21-1	6	35-11	5	45-12	3	61-17	2
21-8	4	35-17	3	47-7	2	61-21	4
25-8	4	35-18		47-95	3	81-2	6
29-1	1	41-3	5	51-1	2		
29-2	2	41-12	4	51-7	6		
29-4	2						

Group 1.	Oct. 17, 18, 20, 21.	Nov. 14, 15, 17, 18.	Dec. 19, 20, Jan. 5, 6.
" 2.	Oct. 22, 23, 24, 25.	Nov. 19, 20, 21, 22.	Jan. 7, 8, 9, 10.
" 3.	Oct. 27, 28, 29, 30.	Dec. 1, 2, 3, 4.	Jan. 12, 13, 14, 15.
" 4.	Oct. 31. Nov. 1, 3, 4,	Dec. 5, 6, 8, 9.	Jan. 16, 17, 19, 20.
" 5.	Nov. 5, 6, 7, 8.	Dec. 10, 11, 12, 13.	Jan. 21, 22, 23, 24.
" 6.	Nov. 10, 11, 12, 13	Dec. 15, 16, 17, 18.	Jan. 26, 27, 28, 29.

Final Examinations January 30, 31, February 2, 3, 4.

SECOND HALF-YEAR

Subject	Group	Subject	Group	Subject	Group	Subject	Group
11-2	5	31-7	3	41-21	3	51-8	6
11-4	5	35-1	1	41-40	6	51-13	5
11-6	3	35-3	6	41-43	5	51-19	4
11-8	3	35-4	1	41-48	4	51-21	3
13-1	6	35-5	1	41-51	2	51-27	5
13-2	6	35-7	6	41-63	1	61-4	4
15-2	6	35-8	4	45-2	1	61-5	2
21-5	4	35-10	5	45-21	4	61-10	2
21-13	6	35-11	5	47-1	6	61-16	4
25-1	6	35-17	3	47-2	6	61-22	7
29-3	2	41-3	5	47-3	2	61-95	3
29-5	2	41-13	4	47-8	3	81-2	6
31-1	1	41-17	5	51-3	4		

Group 1.	Feb. 25, 26, 27, 28.	Mar. 2, 6, 27, 28.	May 1, 2, 4, 5.
" 2.	Mar. 2, 3, 4, 5.	Mar. 30, 31, Apr. 1, 2.	May 6, 7, 8, 9.
" 3.	Mar. 6, 7, 9, 10.	Apr. 3, 4, 6, 7.	May 11, 12, 13, 14.
" 4.	Mar. 11, 12, 13, 14.	Apr. 8, 9, 10, 11.	May 15, 16, 18, 19.
" 5.	Mar. 16, 17, 18, 19.	Apr. 13, 14, 24, 25.	May 20, 21, 22, 23.
" 6.	Mar. 20, 21, 23, 24.	Apr. 27, 28, 29, 30.	May 25, 26, 27, 28.

Final examinations, June 6, 8, 9, 10, 11.

Departments of Instruction

ENGLISH and MODERN LANGUAGES

The instruction in the department of English and Modern Languages is arranged, first, to give the student a working knowledge of his native tongue and of at least one foreign language; second, to deepen his appreciation of literature. The various subjects are closely coördinated, the purpose of all being the development of the student's power of thinking and the broadening of his outlook.

English Subjects are Open for Election as Follows:

	First Term	*Second Term*
Sophomore year	11-13 11-5 11-7 (with permission of instructors)	11-4 11-6 11-8
Junior year	11-13 11-5 11-7 11-9 (must be preceded by 11-8)	11-4 11-6 11-8 11-9 (must be preceded by 11-8)
Senior year	11-13 11-5 11-7 11-9	11-4 11-6 11-8 11-9

11-1 English. A study of the elemental forms of literary and scientific writing: description, exposition, directions, criticism, argument, and narration, with the ultimate aim of helping the student to think for himself. Reading of illustrative literature. *Four periods a week: one lecture, two recitations, and one ten-minute conference.*

First term. Three term hours.

Assistant Professor Seavey, Professor Earle, and Mr. Gott

11-2 English. A study of actual problems in expression. Reading in general science and literature under the guidance of weekly lectures. *Four periods a week: one lecture, two recitations, and one ten-minute conference. Preparation, 11-1.*

Second term. Three term hours.

Assistant Professor Seavey, Professor Earle, and Mr. Gott

***11-4 English.** An advanced subject in general composition, including the writing of daily and fortnightly themes. *Three periods a week: two recitations, and one ten-minute conference. Preparation, 11-2 or 12-2.*

Second term. Two term hours. Professor Earle

11-5 English. A brief survey of English literature and history, from the beginnings to about 1750, aiming to broaden the student's appreciation of what he may get from books, and to suggest ways in which the past throws light on the problems of the present. *Four periods a week: three lectures and one ten-minute conference. Preparation, 11-2.*
First term. Three term hours. ASSISTANT PROFESSOR SEAVEY

11-6 English. A study of some of the most important literary and scientific developments of the nineteenth century. *Four periods a week: three lectures and one ten-minute conference. Preparation, 11-2.*
Second term. Two term hours. ASSISTANT PROFESSOR SEAVEY

11-7 English. Advanced English literature. A study of some author, period, or type. The definite work to be carried on will be outlined by the instructor in charge each June for the following term. *Three periods a week: two recitations and one thirty-minute conference. Preparation, 11-6.*
First term. Two term hours. MR. GOTT

11-8 English. A detailed study of the most important problems of technical writing. *Three periods a week: two recitations and one ten-minute conference. Preparation, 11-2.*
Second term. Two term hours.
MR. GOTT and ASSISTANT PROFESSOR SEAVEY

11-9 English. An advanced subject in technical composition. No class meetings; each student writes papers from ten to fifty pages in length under the individual direction of the instructor. The subjects are taken, as far as possible, from technical work previously done by the student outside of college, or from special research. *One thirty-minute conference a week. Preparation, 11-8.*
First term; repeated in second term. Two term hours.
ASSISTANT PROFESSOR SEAVEY and MR. GOTT

*__11-13 English.__ Argumentative composition adapted to meet the special needs of engineers. *Three periods a week: two recitations and one ten-minute conference. Preparation, 11-2 or 12-2.*
First term. Three term hours. PROFESSOR EARLE

13-1 French. Elementary course. The essentials of grammar, with composition. Reading of short works of modern authors in prose and verse. Open to Freshmen whose entrance language is Latin, Greek, or Advanced German. It must be followed by 13-2 in the Sophomore year. *First term, five recitations a week; second term, four recitations a week.*
First and second terms. Six term hours. MR. HILL

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*Open to students in the School of Liberal Arts as well as to students in the Engineering School.

13-2 French. Review of grammatical principles especially with reference to syntax. Reading of modern works, including one work related to the technical and scientific studies of the Freshman year. Outside reading; vocabulary practice; dictation and composition. *Three recitations a week. Preparation, elementary entrance credit in French, or 13-1.*
First and second terms. Six term hours. MR. HILL

15-2 German. Review of grammatical principles, especially with reference to syntax. Reading of modern works, including one work related to the technical and scientific studies of the Freshman year. Outside reading; vocabulary practice; dictation and composition. *Three recitations a week. Preparation 22-1 or Elementary German for admission.*
First and second terms. Six term hours. MR. HILL

[17-1 **Spanish.** Elementary course. The essentials of grammar; reading of modern prose; practice in writing Spanish. Open to those who have received a grade of C or higher in French 13-2, 13-3 or 13-4. All others wishing to elect the subject should consult the instructor. *Three recitations a week.*
First and second terms. Six term hours. ——— ———]

21 DRAWING

The department of Drawing aims to give a broad and exact training in the language of graphics; to teach the principles of its construction, its technique, and the art of expression by this medium. It is designed to give the student such practice as shall enable him to use this language with fluency whenever and wherever it may serve better than a written or spoken language. The work of the department also includes practice in the use of graphics for the solution of problems relating to the theory of mechanism and its application to machine design.

21-1 Drawing. The course in Freshman Drawing comprises exercises in the proper use and care of drafting tools; numerous problems in geometrical construction; a thorough study of the principles of orthographic projection, freehand and mechanical perspective, and isometric drawing. Considerable time is devoted to the freehand sketching of simple parts of machinery and the careful completion of drawings from these sketches. Throughout the course special attention is given to lettering and the composition of titles. *First term, three periods a week of three hours each, and two periods a week of two hours each.*
First term. Five term hours.
ASSISTANT PROFESSOR ASHLEY and MR. CARROLL

21-5 Descriptive Geometry. A course comprising the study of principles and their applications, by the solution of a large number of graded problems in which theory and practice are correlated. *Three periods a week; two hours each.*

Second term. Three term hours.

MR. CARROLL and ASSISTANT PROFESSOR ASHLEY

21-8 Drawing. A study of the technique of graphic expression and its application in giving complete and accurate information to the constructor. Detailed and assembly drawings are made from freehand sketches and other data, but nothing in the nature of a copy is permitted. The work is conducted according to the methods of progressive draftsmen, the greatest emphasis being laid on completeness and accuracy in the use of graphic language. *Three periods a week; two hours each. Preparation, 21-1.*

First term. Three term hours.

PROFESSOR ANTHONY and MR. CARROLL

21-13 Mechanism. An introductory course, conducted mainly by graphical methods, and dealing with the fundamental laws governing the velocity ratio and paths of mechanical movements and their application to velocity diagrams, simple types of gearing, and other modes of transmission. *Three periods a week; two hours each. Preparation, 21-1.*

Second term. Three term hours.

ASSISTANT PROFESSOR ASHLEY and MR. CARROLL

25 MECHANIC ARTS

Work in the shops is designed to give a practical knowledge of mechanical processes and of the materials of construction. By means of lectures, practical illustrations, actual work in the shops and visits to manufacturing plants the student comes in contact with the most approved methods and processes in engineering practice. In the shops a series of graded exercises is given, having in view the formation of habits of precision and the development of judgment essential to the engineer.

During the Senior year the knowledge of shop methods already gained is put to actual test in the development of Shop Problems which are carried on under "Production Engineering." The student investigates shop conditions in certain plants as to economical and practical methods of production. It is intended that work in the shop shall always maintain a close relation with the courses in drawing and design, much of the work in design being carried to completion in the shop, from drawings prepared in the drafting-room.

25-1 Pattern Making. Practice is given in the use of bench woodworking tools and the wood-turning lathe for the construction of simple patterns from working drawings. A set of graded exercises leads from simple to the more complicated patterns and core boxes. The methods and principles of foundry practice are introduced in the early part of the course. Much time is spent in the study of working drawings to develop the student's ability to apply the best pattern making and foundry practice, and to understand their relation to shop and drafting room. Visits are made to the shops of large manufacturing plants. *Three periods per week; three hours each.*

Second term. Three term hours. MR. ADAMS

25-8 Metal Work. This course is introduced by work at the forge in bending, drawing, upsetting, welding, tool-dressing, etc., followed by work at the vise in chipping, filing, and fitting. Lathe work, including straight and taper turning, chucking, boring, reaming, and thread cutting; also drilling, planing, shaper and milling-machine work. *Three periods per week; three hours each.*

First term. Three term hours. MR. ADAMS

29 MATHEMATICS

The instruction in mathematics is arranged so that fundamental principles of trigonometry, analytics, and calculus may come as early as possible in the course, the more advanced parts of each subject being introduced later. A review of algebra runs through the first year in appropriate connection with topics in the other subjects. The prescribed work continues to the end of the Sophomore year, double time being given to mathematics in the first term of the Freshman year. Seniors and Juniors may elect higher courses in the School of Liberal Arts.

29-1 Computation. Right and oblique triangles, plane and spherical, and vector sums. Trigonometric equations and identities. Arrangement of computations rounding-off processes, use of logarithms and slide rules. Solution of equations by successive approximations. *Three periods a week; two hours each. Simultaneous with 29-2.*

First term. Three term hours.

PROFESSOR RANSOM, ASSISTANT PROFESSOR DILLINGHAM
and MR. TOWSLEY

29-2 Analytical Geometry and Algebra. Co-ordinate systems, straight lines, circles and conic sections. Simultaneous equations, quadratics, variation. Tangents, loci, parameters, lines, planes, and surfaces in space. *Three hours a week. Simultaneous with 29-1.*

First term. Three term hours.

PROFESSOR RANSOM and ASSISTANT PROFESSOR DILLINGHAM

29-3 Freshman Calculus. Fundamental principles. Algebraic differentials and integrals. Differential and integral rate problems. Maxima and minima. Transcendental functions. Areas. *Three hours a week. Preparation, 29-1 and 29-2.*

Second term. Three term hours.

PROFESSOR RANSOM and ASSISTANT PROFESSOR DILLINGHAM

29-4 Sophomore Calculus. Differentiation and Integration. Summation problems. Use of tables. Centroids and Moments. *Three hours a week. Preparation, 29-3.*

First term. Three term hours.

PROFESSOR RANSOM and ASSISTANT PROFESSOR DILLINGHAM

29-5 Sophomore Calculus. Approximate integration. Multiple integrals. Taylor's Theorem, and errors. Elements of Differential Equations. *Three hours a week. Preparation, 29-4.*

Second term. Three term hours.

PROFESSOR RANSOM and ASSISTANT PROFESSOR DILLINGHAM

31 PHYSICS

The instruction in General Physics extends through the second term of the first year and the first term of the second year, and is common to all Courses in the Engineering School. It is the purpose of the course to lay a thorough foundation for the subsequent study of theoretical, experimental and technical Physics. The fundamental principles of the subject are developed in a course of illustrated lectures and recitations. Considerable attention is paid to the application of these principles to the solution of problems.

At the beginning of the second year the student enters the Physical Laboratory, where the work performed is, from the beginning, exclusively quantitative. It is designed to teach the student to make accurate measurements, to impart training in the manipulation of instruments employed in physical investigation, and to give practice in properly recording and interpreting experimental data. At the same time it leads to a better understanding of the principles of Physics, with which the student has already become acquainted in the lecture and recitation room.

31-1 **Mechanics, Sound, and Heat.** The subjects considered are composition of forces, static and kinetic equilibrium, the laws of motion, the energy principle, the simple types of motion including uniform and uniformly accelerated motion, rotation about a fixed axis, simple harmonic motion, and wave motion and resonance; in heat, thermometry, expansion, calorimetry, change of state, transfer, sources, uses, and the laws of thermodynamics. *One lecture and two recitations per week. Preparation, 29-1 and 29-2.*

Second term. Three term hours.

ASSISTANT PROFESSOR MARVIN, MR. POTE, and MR. KNIGHT

31-2 **Optics and Electricity.** The subject of heat is carried over from the previous semester. Following this, the subjects considered are: Optics, sources of light, photometry, velocity, reflection, refraction, optical instruments, dispersion, color, interference, diffraction, polarization; in electricity, electrostatics, the condenser, the electric current, Ohm's law and applications, power, magnetism, the magnetic circuit, electromagnetic induction, the principles of direct and alternating current machines and instruments. *One lecture and two recitations per week. Preparation, 29-3, 31-1.*

First term. Three term hours.

ASSISTANT PROFESOR MARVIN, MR. POTE, and MR. KNIGHT

31-7. **Physical Laboratory.** The earlier experiments relate to the mechanics of solids, liquids and gases. These are followed by experiments in heat including thermometry, vapor pressure, expansion, calorimetry, and mechanical equivalent. The experiments in optics include photometry, reflection, refraction, elementary spectrum analysis, and optical instruments. The experiments in electricity include the measurement of resistance, current, electromotive force, and capacity. The use of various instruments of precision, and of graphical methods of interpreting data, is taught, so far as may be, in connection with these experiments. *One period of three hours, with one and one-half hours preparation, weekly. Preparation, 31-1; 31-2 simultaneously.*

First and second terms. Three term hours.

ASSISTANT PROFESSOR MARVIN, MR. POTE, and MR. KNIGHT

35 CHEMISTRY

35-1 **General Inorganic Chemistry.** An introductory course in theoretical and descriptive inorganic chemistry, with a thorough consideration of the simplest carbon compounds and principal technical processes. *Three periods a week, two lectures, one three hour laboratory period with conferences.*

First and second terms. Six term hours.

PROFESSOR DURKEE, ASSISTANT PROFESSOR COBB, MR. BAKER and ASSISTANTS

35-2 Qualitative Analysis for the detection of the metals, a course which includes the experimental development of schemes for the division of the metals into groups, the separation and detection of the metals in each group, — a study of all the chemical changes and analytical details, together with the correct analysis of six known solutions and thirteen unknown. *Two periods a week ; three hours each ; laboratory work and conference. Six lectures.*

First term. Two term hours. Professor Durkee, and Assistants

35-3 Qualitative Analysis, Advanced, dealing with methods to effect solution of solids, the detection of mineral and common organic acids, the complete analysis of inorganic solids, including mixtures of salts, minerals, alloys, and slags. Three known and thirteen unknown are required, and thorough study of the chemical changes and conditions involved in the analyses. *Two periods a week ; three hours each ; laboratory work and conference.*

Second term. Two term hours. Mr. Baker

35-4 Quantitative Analysis. Theory and practice of gravimetric and volumetric analysis, including the determination of chlorine by the ordinary and Gooch crucible methods, iron and sulphur in furous ammonium sulphate, silica in a silicate, phosphorus in a phosphate, complete analysis of dolomite, and brass, preparation of strictly half-normal sodium hydroxide and hydrochloric acid solutions, the volumetric analyses of soda ash and oxalic acid, the analysis of iron ore by the dichromate and permanganate methods, determination of chromium in chromite, of antimony by the iodine method, and silver by the sulphocyanate method. *Three periods a week ; three hours each ; laboratory work and conference.*

First and second terms. Six term hours. Professor Durkee

35-5 Quantitative Analysis. Technical. Work varied somewhat to meet the needs of individual students. Course ordinarily comprises proximate analysis of coal, nitrogen in coal, by Kjeldahl's method, complete analysis of boiler scale, mineral and sanitary analysis of water, determination of copper in ores by iodine and cyanide methods, of zinc by ferro-cyanide method, complete analysis of Babbitt metal, determination of lead in ores, and manganese, sulphur, phosphorus, silicon and carbon in iron and steel. *Three periods a week ; three hours each ; laboratory work and conference.*

First and second terms. Six term hours. Professor Durkee

35-7 Fire Assay. A course which deals with the theory and practice of sampling and assaying gold and silver ores. *Two periods a week ; three hours each ; laboratory work and conference.*

Second term. Two term hours. Professor Durkee

35-8 **Metallurgy of Iron and Steel.** Considered largely from the chemical side, and includes the study of ores, fluxes, fuels, furnaces, and the other mechanical devices used in the commercial production of pig iron, wrought iron, and steel, together with the solution theory of iron and steel, heat treatment of steel, and production of malleable cast iron. *Two periods a week ; one hour each ; lectures and recitations.*
Second term. Two term hours. Mr. Baker

35-9 **Technical Gas Analysis,** by the Orsat, Elliot, and Hempel systems. *One period a week, of three hours.*
First term. One term hour. Professor Durkee and Assistant

35-10 **Organic Chemistry.** This course consists of lectures, recitations, and laboratory work. It is intended to familiarize the student with the typical compounds of carbon and their more important derivatives. The work in the laboratory includes the preparation of certain of the more important substances referred to in the lectures, and the identification of certain classes of compounds. *Four periods a week ; three lectures ; one three-hour laboratory period.*
First and second terms. Eight term hours.
Assistant Professor Cobb

35-11 **Theoretical Chemistry.** The subject matter of this course consists largely of the principles usually included under the head of Physical Chemistry. The work in the laboratory consists of physical chemical measurements and experiments of a physical chemical nature. *Three periods a week, two lectures, one three-hour laboratory period.*
First and second terms. Six term hours. Assistant Professor Cobb

35-17 **Applied Chemistry.** A course dealing with the most important applications of inorganic and organic chemistry to manufacturing purposes, such as the production of sulphuric acid, soda, illuminating gas, and sugar. *Three periods a week. Two lectures or recitations, and one three-hour laboratory period.*
First and second terms. Six term hours. Professor Durkee

35-18 **Chemistry of Road-building Materials.** The origin, production, refining, and chemical analysis of tars, asphalts, petroleum and coal tar oils, Portland and other cements. The course is designed for advanced students in highway engineering, and should fit them for efficient service in cement laboratories and cement plants, and for testing the bituminous materials now so widely applied to road surfaces. *Two three-hour laboratory periods and one recitation per week. Preparation, 41-21, 35-1, and 35-2.*
First and second term. Six term hours. Professor Durkee

35-99 **Chemical Engineering Thesis.** The development of a Chemical Engineering problem by extended personal research. The head of the department has authority to substitute another engineering subject for the thesis.

Second term. Three to five term hours.
PROFESSOR DURKEE and ASSISTANT PROFESSOR COBB

41 CIVIL ENGINEERING

41-3 **Surveying.** In this course each student obtains field practice with transit, level and plane table; also, an office drill in plotting and in surveying computations. The problems that are selected for both field and office are intended to illustrate general surveying principles and are considered to be well adapted to the needs of engineers in all courses. They include surveying problems that are incident to building construction and the installation of machinery, as well as problems that occur in ordinary surveys for topography and for area. Text-books; Tracy's Plane Surveying, and Topographical Drawing, by Daniels. *One three-hour period a week, first term; two three-hour periods a week, second term. Preparation, 29-1.*

First and second terms. Total, three term hours. MR. BURDEN

An equivalent for this course may be taken during the summer.

41-12 **Railroad Surveying.** The greater part of the problems selected for this course are based on information secured by the student while engaged in the reconnoissance and preliminary survey of a short line of proposed railroad near the College. These proplems consist of the more important ones that daily arise in the practice of the railroad engineer, and they comprise the determination and location of all simple and compound curves that might be required for the final location of the line; the accurate plotting of the survey notes by means of a system of co-ordinates; the computations arising in the various solutions with a strict insistance upon neat and accurate note-keeping; a preliminary estimate of the materials of construction required; the completion of all drawings, and a final report as to the advisability of building the line. Text books: Field Engineering, by Searles. *Three periods a week; three hours each. Preparation, 41-3.*

First term. Three term hours. ASSISTANT PROFESSOR CONNER

41-13 **Railroad Engineering.** A thorough analysis, both theoretical and practical, of the transition spiral; the study of earthwork computations, use of the mass diagram, determining cost of overhaul, use and computation of the vertical curve, proper methods of attack in steam-shovel work, the design and estimate of trestle construction, of culverts and waterways, and a general treatment of methods employed in locating all structures of standard design that support the roadbed. A brief study is made of the analysis of labor costs, and of the general principles underlying the scientific management of materials and men. Textbooks: The Railway

54-23 Economic Geology.
Second term. One term hour. PROFESSOR LANE

54-24 Historical Geology. *Preparation 54-1 or 54-21 and 54-22.*
Second term. Two term hours. PROFESSOR LANE

61 ELECTRICAL ENGINEERING

The aim of the work in this department is to fit men to deal intelligently with electrical problems likely to be presented to the practical engineer. With this in view, principles rather than details are emphasized, and these principles are developed and fixed by the free use of concrete problems as well as by laboratory experiments and tests.

61-3 Dynamo Electric Machinery. An elementary course dealing with the fundamental principles of dynamo electric machinery and their application in the construction and operation of generators and motors. Some attention is also given to storage batteries, arc and incandescent lamps and systems of direct-current distribution. *Three periods a week; one hour each. Preparation, 31-2 and 45-21.*
First term. Three term hours.
ASSISTANT PROFESSORS ROLLINS and MUNRO

61-4 Electrical Laboratory. Electrical measurements and testing, including, in addition to the more common measurements, calibration of instruments, study of arc and incandescent lamps, and direct current dynamos. *Three periods a week; three hours each; three hours outside work. Preparation, 61-3.*
Second term. Four term hours.
ASSISTANT PROFESSORS ROLLINS and MUNRO

61-5 Alternating Current Machinery. A course treating of the theory, construction, and operation of synchronous machinery. *Three periods a week; one hour each. Preparation, 61-3.*
Second term. Three term hours. ASSISTANT PROFESSOR MUNRO

61-7 Dynamo Laboratory. Alternating current testing. *Three periods a week; three hours each; three hours outside work. Preparation, 61-5. Simultaneous with 61-15.*
First term. Four term hours.
ASSISTANT PROFESSORS ROLLINS AND MUNRO

61-10 Electrical Laboratory. For students in engineering courses other than Electrical. Measurements, tests, and descriptive matter selected with special reference to the needs of those who have but little opportunity

for electing subjects in Electrical Engineering. *Three periods per week; two hours each. Preparation 61-3.*
Second term. Two term hours. ASSISTANT PROFESSOR ROLLINS

61-11 Alternating Currents. The mathematical development of equations and formulas from elementary electrical principles, and the physical interpretation of the equations and formulas thus developed. *Three periods a week;one hour each. Preparation, 31-2, 45-21, and 29-5.*
First term. Three term hours. PROFESSOR RANSOM

61-15 Electrical Engineering. A course dealing with the production, transmission, distribution, and utilization of electrical power. *Three recitations a week, with solution of assigned problems. Preparation, 61-5.*
First term. Three term hours. PROFESSOR HOOPER

61-16 Electrical Engineering. A continuation of 61-15. *Three periods a week; one hour each. Preparation, 61-15.*
Second term. Three term hours. ASSISTANT PROFESSOR ROLLINS

61-17 Telephone and Telegraph. A course on principles and operation of telephone and telegraph systems. *Three periods a week. Preparation, 31-2 and 61-3.*
First term. Three term hours. ASSISTANT PROFESSOR ROLLINS

61-21 Dynamo Design, D.C. A course in the design of direct-current machinery. *Three periods a week; two hours each. Preparation, 61-3.*
First term. Three term hours. ASSISTANT PROFESSOR MUNRO

61-22 Dynamo Design, A.C. A course in the design of alternating current apparatus. *Three periods a week; two hours each. Preparation, 61-5 and 61-21.*
Second term. Three term hours. ASSISTANT PROFESSOR MUNRO

61-95 Electrical Topics. Lectures by students on electrical subjects, followed by discussion and criticism. *Three periods a week. Preparation, 61-15.*
Second term. Three term hours. ASSISTANT PROFESSOR ROLLINS

61-99 Thesis. An essay based on some construction, design, or investigation. The head of the department has authority to substitute another engineering subject for the thesis.
Second term. Three to five term hours.
ASSISTANT PROFESSORS ROLLINS and MUNRO

64 MINERALOGY

64-1 Mineralogy and Lithology. *Two recitations and four hours laboratory work a week. Preparation, 35-1.*
First term. Three term hours. PROFESSOR LANE

64-1 Mineralogy alone is of use to civil and structural engineers, but those who are looking to mining or chemical engineering should also take 64-2.

[**64-2 Crystallography and Optical Mineralogy.** *Two lectures and four hours laboratory work a week. Preparation, 64-1.*
Second term. Three term hours. PROFESSOR LANE]

66 and 81 POLITICAL ECONOMY

81-2 Elements of Economics. Designed especially for students of engineering; aims at a comprehensive study of the elements of economics, with special reference to present day economic and social problems. Text book (Taussig, Principles of Economics), lectures, tests. *Three recitations a week.*
First and second terms. Six term hours. PROFESSOR METCALF

66-5 Money, Credit, and Banking. An historical course, with special reference to the financial experience of the United States. Leading topics are Hamilton's financial system; protection and revenue tariffs; the bank question; the fiscal policy of the Civil War; resumption of specie payments; the national banking system; State and local taxation; silver legislation and the panic of 1893; government loans; present currency problems. Dewey's Financial History of the United States is used as a guide. *Three recitations a week. Preparation, 81-2.*
Second term. Three term hours. MR. LIMING

66-6 Modern Industrial Combinations. The economics of corporations, with special reference to the so-called trust problem. Among the topics treated are trust promotion, capitalizations, trusts and industrial efficiency, influence of combinations upon prices, profits, wages, rights of investors, international trade, industrial stability, and business honor; the practical results attained through publicity, taxation, recent court decisions, and State regulations. Lectures, recitations, and reports. *Three recitations a week. Preparation, 81-2.*
First term. Three term hours. PROFESSOR METCALF

66-16 Modern Labor Problems. This subject deals mainly with the social and economic problems arising from the relations of employers and their laborers. The chief topics will be the government and policies of trade unions, methods of industrial remuneration, methods of industrial harmony, the relations of organized labor to child, woman and prison labor, unemployment and vocational training. Carlton's History and Problems of Organized Labor will be used as a guide. *Lectures and recitations. Three recitations a week Preparation, 81-2.*
Second term. Three term hours. PROFESSOR METCALF

66-17 Modern Industrial Organization and Business Management. (*a*) Brief survey of the evolution of modern capitalism; defects of the present industrial order; plant equipment; the concentration and integration of modern business; types of business administration and management.

(*b*) The principles of scientific management. Application of scientific management to industry, government, education, social work. Attitude of labor toward scientific management. Specialized studies in problems of work hazards — accidents, industrial disease, industrial overstrain, misemployment and unemployment, old age. The principles, goal, applications, and dangers of vocational guidance. What employer, employee and consumer gain through economies of scientific management and vocational guidance. *Lectures*, *readings*, *theses*. Either half year may be counted as a half subject.

Three recitations a week. Preparation, 81-2. PROFESSOR METCALF

THE GRADUATE SCHOOL

Faculty of the Graduate School

WILLIAM L. HOOPER, AM., PH.D., ACTING PRESIDENT
Professor of Electrical Engineering

CHARLES E. FAY, A.M., LITT.D., DEAN
Wade Professor of Modern Languages

WILLIAM H. REED, JR., A.M., SECRETARY

RICHARD JONES, PH.D.
Professor of English Literature

FRANK W. DURKEE, A.M.
Professor of Chemistry

GEORGE VAN NESS DEARBORN, A.M., PH.D., M.D.
Professor of Physiology

HERBERT V. NEAL, PH.D.
Professor of Zoology

WILLIAM K. DENISON, A.M.
Professor of the Latin Language and Literature

HENRY C. METCALF, PH.D.
Jackson Professor of Political Science

*CHARLES ST. CLAIR WADE, A.M.
Professor of the Greek Language and Literature

FRANK G. WREN, A.M.
Walker Professor of Mathematics

ALFRED W. BALCH, PH.G., M.D.
Assistant Professor of Medical Chemistry

ARTHUR I. ANDREWS, PH.D.
Professor of History

PHILIP H. COBB, PH.D.
Assistant Professor of Physical and Organic Chemistry

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*Absent on leave.

STANDING COMMITTEES OF THE GRADUATE SCHOOL

EXECUTIVE: Acting President Hooper, *Chairman*; Professors Denison and Wren.

REQUIREMENTS FOR DEGREES: Dean Fay, *Chairman*; Professors Metcalf and Durkee.

Transition Spiral, by Talbot; Railroad Construction by Crandall and Barnes. *Three periods a week ; one hour each. Preparation, 41-12.*
Second term. Three term hours. ASSISTANT PROFESSOR CONNER

41-14 **Railroad Engineering.** A recitation course comprising the study of tunnel design, roadbed construction, track materials and track work, frogs and switches, yard and terminal layouts, siding design and construction, signaling and interlocking, equipment and tools, and the general principles of railroad maintenance. Problems are given in the elementary economic principles involved in railroad upkeep, the treatment of ties, and the capitalized comparison of structures. The student may be required to develop a proposed siding both for the design and the actual staking. Textbooks: Railroad Construction, by Crandall and Barnes, and The American Civil Engineers' Pocketbook. *Three periods a week ; one hour each. Preparation, 41-13. First term. Three term hours.*
ASSISTANT PROFESSOR CONNER

41-17 **Railroad Engineering Economics.** Lectures and recitations on the economic principles underlying the proper management of all engineering business associated with the location, development, management, and operation of a railroad. A general outline of the procedure in financing railroad ventures is given with the attendant principles involved in bonding and under writing such projects, and their application is fully demonstrated by the solution of typical problems. Text book: Economics of Railroad Construction, by Webb. *Three periods a week ; one hour each. Preparation, 41-14.*
Second term. Three term hours. ASSISTANT PROFESSOR CONNER

41-21 **Highways and Cements.** Lectures and recitations on the history of roads and pavements; subdrainage and surface drainage; foundations; earth and broken stone roads; brick, wood and stone block pavements; asphaltic and concrete pavements; use of dust palliatives; cleaning and sanitation of streets; sewer, gas, water and other pipe systems; machinery used in road construction.

Laboratory work consists of the mechanical analysis of sand and the proportioning of concrete by sieve analysis; determination of silt in sand; testing Portland cement by standard specifications; road-building properties of asphaltic oils, and bituminous materials; tests of wearing and cementing qualities of rocks and abrasion test of paving brick.

Office and field work comprise the preparation of plan and cross sections from survey notes of an existing unimproved road; location of a highway from contour plan; actual survey, design and mapping of streets including determination of proper grades at street intersections; inspection of roads. Text book: American Civil Engineers' Pocketbook. *One recitation and one three-hour laboratory period per week.*
First term ; repeated in second term. Two term hours. MR. BURDEN

41-31 **Geodesy.** The determination of a true meridian by star and solar observations, accurate measurement of a base line, of angles in a triangulation system, and the adjustment of observations by the method of least squares. Text book; Geodetic Surveying, by Ingram *Two periods a week; three hours each. Preparation, 41-3.*

First term. Two term hours. ASSISTANT PROFESSOR CONNER

41-40 **Hydraulics.** Theoretical and Applied, including the laws that relate to the pressure and flow of water in pipes, the discharge through weirs, tubes, and canals, together with a treatment of the elementary principles of water turbines. Tests of 100 horsepower turbine, 36-inch Venturi Meter, 40-inch riveted pipe, and 10-foot weir. Text book: A Treatise on Hydraulics, by Merriman. *Three periods a week; one hour each.*

First term; repeated in second term. Three term hours.

PROFESSOR SANBORN

41-43 **Hydraulic Measurements.** Experiments on contracted and submerged weirs, standard nozzles, proportional water meter, impulse water wheel, duplex pump, and centrifugal pump; river and canal gaugings by rod floats, and current meter. Text book: A treatise on Hydraulics, by Merriman. *Two periods a week; three hours each. Preparation, 41-40.*

Second term. Two term hours. PROFESSOR SANBORN

41-46 **Water Supplies.** The examination of water supplies, quality of water, communicable diseases, purification of water, water supplies, reservoirs, dams, pumping machinery. Textbook; American Civil Engineers' Pocketbook. *Three periods a week; one hour each. Preparation, 41-40.*

First term. Three term hours. PROFESSOR SANBORN

41-47 **Water Power Engineering.** Water shed areas, stream flow, hydraulics of water wheels and turbines, turbine testing, selection of turbine for given conditions, water-power development and value of privileges. Text book: Water Power Engineering, by Mead. *Three periods a week; one hour each. Preparation, 41-40.*

First term. Three term hours. PROFESSOR SANBORN

41-48 **Sewerage.** Purification of sewage, the design of a sewerage system, forms of construction, modern methods of sewage and garbage disposal. Text-book: American Civil Engineers' Pocketbook. *Three periods a week; two hours each. Preparation, 41-46.*

Second term. Three term hours. PROFESSOR SANBORN

41-51 **Fire Protection Engineering.** Fire streams, fire pumps, meters, pipe systems, including automatic sprinklers, watchman service, public fire departments, fire causes, and fire proof and slow burning construction. Recitation and design from field practice. *Two periods a week; two hours each. Preparation, 41-40.*

Second term. Two term hours. PROFESSOR SANBORN

41-63 Contracts. The essential elements of all contracts, their formation and modes of discharge, the fundamental principles of successful writing and interpretation of contracts for the erection of engineering works, are carefully considered. Commercial contracts are also studied, including contracts of association, of sale, of transportation, and instruments of credit. The duties and legal responsibilities of the engineer as agent, business man, or independent contractor are emphasized, and some practice is had in writing engineering contracts and specifications. Text book: Contracts in Engineering by Tucker. *Three periods a week; one hour each.*

Second term. Three term hours. ASSISTANT PROFESSOR CONNER

41-95 Civil Engineering Topics. Presentation and discussion of engineering topics. Text book: Proceedings of the American Society for Civil Engineers for the present year. *Two periods a week; one hour each. Preparation, Junior Civil Engineering courses.*

First term. Two term hours. PROFESSOR SANBORN

41-99 Civil Engineering Thesis. A special investigation by research, design, or experimentation. The head of the department has authority to substitute another engineering subject for the thesis.

Second term. Three to five term hours.

PROFESSOR SANBORN and ASSISTANT PROFESSOR CONNER

45 APPLIED MECHANICS

45-1 Applied Mechanics. This is a consideration of the principles of the strength of materials, relating to beams, columns and shafts. In the development, the following subjects are treated in detail: centre of gravity; moment of inertia; the laws of elasticity; coefficients of elasticity; relations between stress and strain; pure stresses, as tension, compression, and shear; elastic limits, working stresses and ultimate resistances of wrought iron, steel, timber, and concrete; reactions and bending moments of beams; bending moment and shear diagrams; theory of flexure. It includes also the design and construction of steel and timber beams, columns, and shafts. *Three periods a week; recitations and lectures with numerous problems. Preparation, 29-5 and 45-21.*

First term. Three term hours. PROFESSOR ROCKWELL and MR. TOWSLEY

45-2 Applied Mechanics. This course deals with the stresses in simple framed structures, including an introduction to the methods of graphic statics, and a brief treatment of the principles of mechanics involved in masonry design. *Three periods a week; recitations and lectures with problems. Preparation, 45-1.*

Second term. Three term hours.

PROFESSOR ROCKWELL, ASSISTANT PROFESSOR SMITH, and MR. TOWSLEY

45-3 Structural Mechanics. A treatment of the mechanics of masonry and reinforced concrete structures, including the design of retaining walls, abutments, masonry arches, chimneys, dams, and foundations. *Three periods a week; recitations and lectures with problems and designs. Preparation, 45-2.*
First term. Three term hours. PROFESSOR ROCKWELL

45-12 Applied Mechanics Laboratory. This course deals with the resistance of the materials of construction, and comprises the testing of cast iron, steel, wrought iron, timber, and concrete in tension, compression, and shear, and the determination of the elastic limits, ultimate strengths, and coefficients of elasticity of these materials. *One period a week; two hours. Simultaneous with 45-1.*
First term. One term hour.
ASSISTANT PROFESSOR SMITH and MR. TOWSLEY

45-21. Mechanics. A course in the fundamental principles of general mechanics with numerous applications to engineering problems. Statics, motion, dynamics, work and energy, and friction. *Three periods a week; Preparation, 31-1.*
Second Term. Three term hours.
PROFESSOR ROCKWELL, ASSISTANT PROFESSOR SMITH, and MR. TOWSLEY

47 STRUCTURAL ENGINEERING

47-1 Roofs and Bridges. A study of the fundamental principles of Structural Engineering. It includes the theory of algebraic and graphical stress analysis for statically determinate structures, including roofs, bridges, towers, etc., and the design of structural members and details. *Three periods a week; lectures and recitations, with problems. Preparation, 45-2.*
First term. Three term hours
PROFESSOR ROCKWELL and ASSISTANT PROFESSOR SMITH

47-2 Theory of Structures. An advanced course in the theory and design of structures. The method of influence lines is used to a considerable extent in addition to the usual algebraic methods. *Three periods a week; lectures aud recitations, with problems. Preparation, 47-1 and 45-3.*
Second term. Three term hours. PROFESSOR ROCKWELL

47-3 Structural Design. An introductory course in the design of framed structures. It consists of (*a*) the critical examination of and report on some existing structure and (*b*) the design and detail drawings of a plate girder bridge, and a steel roof truss. *Three periods a week; three hours each. Simultaneous with 45-2.*
Second term. Three term hours.
ASSISTANT PROFESSOR SMITH and MR. TOWSLEY

47-7 Bridge Design. A course in the design of riveted and pin connected steel bridges. It consists of (*a*) one complete design of a typical bridge, including a critical study of the important details, carried on under the guidance of the instructor, and then (*b*) each student is given a different set of data from which he is required to make an independent design and general drawing. *Three periods a week; three hours each. Preparation, 47-3. Simultaneous with 47-1.*

First term. Three term hours.

ASSISTANT PROFESSOR SMITH and MR. TOWSLEY

47-8 Structural Design. The design of masonry and reinforced concrete structures. *Two periods a week; three hours each. Preparation, 45-3.*

Second term. Two term hours.

PROFESSOR ROCKWELL and ASSISTANT PROFESSOR SMITH

47-95 Structural Topics and Reports. Reports by each student on assigned reading in engineering literature, and on the stability and safety of structures, based on a personal examination by the student. The presentation is by lecture, but a written copy of each report must be left with the department. *Two periods a week; one hour each. Preparation, credit in required work of the Junior year.*

First term. Two term hours.

PROFESSOR ROCKWELL and ASSISTANT PROFESSOR SMITH

47-99 Structural Engineering Thesis. A single topic is developed by extended research, design, or experimentation.

Second term. Three to five term hours.

PROFESSOR ROCKWELL and ASSISTANT PROFESSOR SMITH

51 MECHANICAL ENGINEERING

51-1 Steam Engine. This course deals with the generation of steam and its use in the steam engine. It comprises a study of modern types of boilers and their auxiliary apparatus, simple and compound engines, both condensing and non-condensing; a discussion of the elementary principles of thermodynamics and of the use of the indicator in steam engine practice. Some attention is given to the production of gas for power purposes and its use in the gas engine. *Three periods a week; one hour each. Preparation, 21-13 and 29-3.*

First term. Three term hours. PROFESSOR CHASE

51-3 Engineering Thermodynamics. This course is devoted to the thermodynamics of the steam engine and other heat engines, and includes a study of the properties of steam, gas and air as used in steam engines, turbines, gas engines, air compressors and blowers; also the working fluids and saturated vapors used in refrigeration. The object of the course is to teach the principles, and their application to practical problems. *Three periods a week ; one hour each. Preparation, 29-5 and 51-1.*

Second term. Three term hours. PROFESSOR CHASE

51-7 **Engine Design.** The design of the steam turbine, steam engine and gas engine, involving the strength and proportion of parts and including the layout of the valve gear of high speed engines, the Corliss gear and locomotive valve gears. *Three periods a week ; two hours each. Preparation, 51-3, and simultaneous with 51-15.*

First term. Three term hours. PROFESSOR CHASE

51-8 **Power Plant Design.** A study of steam and gas power plant equipment. Boiler design, including calculations for one type of boiler. Pumps, heaters, condensers; arrangement of piping; chimneys, mechanical draft; mechanical stoking, coal handling. *Three periods a week ; two hours each.*

Second term. Three term hours. PROFESSOR CHASE

51-13 **Mechanics of Machinery.** The determination of the efficiency of machines, the frictional resistance and the forces acting through the several parts. Transmission by belting, ropes, gears, friction drive, and clutches. Analytical and graphic methods are used in the solution of a large number of practical problems. *Three periods a week ; one hour each. Preparation, 21-13 and 45-1.*

Second term. Three term hours. PROFESSOR ANTHONY

51-15 **Dynamics of Machinery.** A graphical and analytical consideration of the transmission of energy in machines. The construction of inertia curves and crank effort diagrams applied to the solution of problems relating to fluctuations in speed, flywheels, balancing of moving parts and regulation by governors. *Three periods a week ; one hour each. Preparation, 51-13.*

First term. Three term hours. PROFESSOR CHASE

51-17 **Machine Design.** An application of the principles of mechanism and mechanics to the solution of definite problems in the design of a representative type of machine. A systematic training of the judgment is an important part of this course. *Three periods a week ; three hours each. Preparation, 45-2 and 51-13.*

First term. Three term hours. PROFESSOR ANTHONY

51-19 **Production Engineering.** A study of the efficiency of machine tools, the design and construction of special tools for the manufacture of machinery, the investigation of shop conditions and practice for the economical production of machine parts. *Three periods a week ; three hours each. Preparation, 25-8.*

Second term. Three term hours.

PROFESSOR ANTHONY and MR. CARROLL

51-21 Mechanical Engineering Laboratory. Efficiency of simple machines; screw threads; hoists, simple, duplex, triplex; rope and belt friction; transmission of power by belts. The determination of the clearance of engines; valve setting on plain slide valve, riding cutoff, and Corliss engines. Gage testing; the adjustment and use of indicators; testing indicator springs; the use of several types of steam calorimeters; injector test; flow of steam through orifices. The results of all laboratory work are submitted in the form of carefully written reports. *Two periods a week; three hours each. Preparation, 51-1.*

Second term. Two term hours. PROFESSOR CHASE

51-26 Mechanical Engineering Laboratory. Steam engines, pumps and auxiliary apparatus. Tests on riding cut-off shaft governor and Corliss engines; a 16 x 8½ x 9 duplex steam pump; measurement of water by weir, nozzle and meter; condenser tests; analysis of flue gases. Internal combustion engines. Tests on a 10 H.P. 4 cycle gas engine, 11 H.P. 2 cylinder, 2 cycle gasolene engine, automobile engines, and marine type engines, including instruction and practice in their operation. *Three periods a week; three hours each. Preparation, 51-21. Simultaneous with 51-7.*

First term. Three term hours. PROFESSOR CHASE and MR. ADAMS

51-28 Mechanical Engineering Laboratory. Tests on a horizontal return tubular boiler; determination of the velocity of steam through ports; coefficients of friction with different oils and friction on different types of bearings; test on a 35-inch exhaust fan; tests on a steam turbine and on an air compressor; test at a 2000 K.W. power station, and other tests which may be arranged. *Three periods a week; three hours each. Preparation 51-26.*

Second term. Three term hours. PROFESSOR CHASE

51-96 Mechanical Engineering Topics. A course of lectures by students. Each member of the course chooses three topics from the proceedings of the American Society of Mechanical Engineers. The subjects are presented to the class in the form of lectures, followed by discussion and criticism. *Two periods a week. Preparation, Junior Mechanical Engineering courses.*

Second term. Three term hours. PROFESSOR ANTHONY

51-99 Mechanical Engineering Thesis. An essay based on extended personal research, design, or experimentation. The head of the department has authority to substitute another engineering subject for the thesis.

Second term. Three to five term hours.

PROFESSORS ANTHONY AND CHASE

54 GEOLOGY

The subjects offered in the department of Geology do not form a sequence, but are intended to give different classes of students that knowledge of geology and mineralogy which they need. In all cases, they aim to include some real grasp upon the structure and history of the earth, the problems presented in the study thereof, and the modes of attack upon those problems. The first subject (Geology 1) is introductory, open to all, and intended primarily for those who have had no previous work in science. The other subjects are such that certain preliminary studies, stated in connection with each, must be taken before entering upon them.

The illustrative collections in these lines are ample. Besides exhibition specimens in the Barnum Museum, there is a working collection illustrating mineralogy, lithology, and dynamical and historical geology. These are supplemented with maps, diagrams, photographs, and lantern slides. The work in each subject consists of lectures and recitations, together with work in the laboratory and in the field. Excursions are taken to neighboring points that illustrate certain phenomena. Tufts College is well placed for field work and for the study of various natural processes.

54-1 **Physical Geology and Geography.** Lectures, recitations, and field work. Mainly for those intending to teach. *Three periods a week; one hour each; and seven half-day excursions.*
Second term. Three term hours. PROFESSOR LANE

*54-21 **Physical Geography and Meteorology.**
First term. One term hour. PROFESSOR LANE

*54-22 **Physical Geology.**
First term. Two term hours. PROFESSOR LANE

54-23. **Economic Geology.**
Second term. One term hour. PROFESSOR LANE

54-24. **Historical Geology.**
Second term. Two term hours. PROFESSOR LANE

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* 54-21 and 54-22 must be taken together, and they or 54-1 must precede 54-24. A knowledge of chemistry and mathematics is presupposed.

The Graduate School

INSTRUCTION

Graduate instruction is given by members of the several existing faculties. The advanced elective work offered to undergraduates in any department of the School of Liberal Arts is open to graduate students,* and will count for the degree of Master of Arts, on condition that it be not counted for any other degree. More advanced courses are arranged with the instructor in whose department the work is to be done.

DEGREES

The degrees offered are Master of Arts and Master of Science. Departments open to candidates for the Master's degree are:—

English
Modern Languages,
Ancient Languages,
History and Public Law,
Political Science,
Mathematics,
Chemistry,
Physiological Chemistry,
Biology,
Physiology,
Electricity.

The Degree of Master of Arts will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts, or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions:—

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one or at the most two departments. If two departments are chosen they should be allied, and should note the relation of major and subsidiary department.

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* Students doing work in undergraduate classes are required to take the appointed final examination with these classes.

2. This course shall be pursued during a residence of not less than one year. In the case of graduates of Tufts College, the condition of residence may be waived by special permission, but the degree cannot then be taken with less than two years of graduate study.

3. The candidate shall prepare a thesis in the form prescribed by the regulations, which may be ascertained at the Secretary's office, and shall pass a satisfactory examination under the supervision of a board of three examiners, appointed by the Graduate Faculty at its May meeting. The thesis must be presented at least one month before Commencement.

4. No subject counted for the first degree will be counted for the second degree.

5. Students taking the advanced degree at the end of a four years' course of study must have complied with the requirement as to standing governing those who receive the degree of A.B. at the end of three years; that is, an average standing of Grade B, must have been attained on the entire work of the undergraduate course.

6. Candidates for this degree must make a written application to the Graduate Faculty before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year of study they must also give a second notice three months before receiving the degree. Their application shall specify the department or departments in which it is proposed to pursue work for a degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirement for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF MASTER OF SCIENCE will be conferred upon Bachelors of Science who shall satisfactorily pursue advanced professional study at Tufts College for one year, under the conditions required of candidates for the degree of Master of Arts; or upon Bachelors of Science of Tufts College who shall pursue graduate study *in absentia* for at least two years, or who shall present suitable evidence of three years of professional work, one year of which must be in a position of responsibility. A thesis based upon this study will be required.

DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF MASTER OF ARTS

[For detailed statements of the subjects referred to in the following pages, see "Departments of Instruction" in the announcement of the School of Liberal Arts.]

ENGLISH.—It is assumed that candidates for the degree of Master of Arts in English will have already laid a good foundation in English composition and the history of English literature. The amount of work expected is roughly indicated by that required of a major student in English at this College. When not anticipated in undergraduate work, the subjects numbered 7, 10, 14 to 21, 23 to 26, 29, 34, and 36 may be counted towards the Master's degree, provided that the work done distinctly surpasses in quality and quantity that required of undergraduates. On the other hand, a part of the work or the entire work for the advanced degree may consist of a special course of study, undertaken under the direction of the department. Such special work must be of creative or investigative order. It may take the form of discussion of some question in literary history or literary criticism. It may consist of the intensive study of an author or a period. The use of German and French is sometimes necessary. A final oral examination is customary.

MODERN LANGUAGES.—The undergraduate subjects at present offered in Modern Languages enable the candidate for the degree of Bachelor of Arts who specializes in this department to cover the work formerly required for the Master's degree. Hence the earlier part of the work of candidates who have not taken the more advanced subjects, corresponds with that announced for undergraduate classes. To enter upon these courses, the candidate must have completed the equivalent of the Modern Language subjects, including 1 and 3 in both German and French, and 3B and 4 of the language in which the degree is sought. Of "elementary" subjects only Italian may be taken.

Graduate students whose special work is being performed in other departments are admitted to such classes in German and French, beyond subject 1, as their proficiency will warrant.

ANCIENT LANGUAGES. — Candidates for the degree of Master of Arts in Greek or Latin must have completed, for Greek, subjects 1, 2, 3, and 4 or 5; for Latin, subjects 1, 2, 3 or 4, and 5, or equivalents. It is desirable that candidates for this degree in either of the ancient languages present the other as a minor department. Exceptional cases will be treated in accordance with the varying circumstances. Greek 4, 5, 7, Latin 3, 4, 6, and Classical Archæology 1, 2, 3, 4, 5, 6, 7, and 8, so far as these have not been anticipated as undergraduate work, may be counted towards the Master's degree. Graduate students will be expected to do work of an advanced character, either in classes with undergraduates or on special lines of investigation assigned by the instructors. The required thesis, on an approved topic, must embody the results of the investigation of some author or period, or of some philological or archæological subject. A reading knowledge of French and German is indispensable.

HISTORY AND PUBLIC LAW.—Before beginning graduate work in History and Public Law every student must have completed History 1 and 2, and Public Law 1 or 2, or their equivalent. The advanced subjects enumerated in the catalogue, in so far as they are suited to the needs of the candidate, may be offered for the higher degrees, but it is expected that much of the candidate's work will consist of special work pursued under the direction of the department.

For the degree of Master of Arts, a working knowledge of French is essential. A similar knowledge of German is desirable, and in some cases may be necessary. In addition to the subjects required for the degree candidates will be expected to do something in the way of an independent investigation of a definite subject, the result to be embodied in a thesis.

A final oral examination is customary.

POLITICAL SCIENCE.—The degree of Master of Arts in Political Science is conferred on graduates of Tufts College who pursue successfully one year of resident graduate study. Bachelors of Arts of other colleges must satisfy the department that they are qualified by previous training to enter upon the desired course of study, and show the results of a year's resident graduate work with high credit. A good reading knowledge of French and German is desirable, and may in certain lines of work be necessary. Before receiving the degree all candidates are expected to sustain a final oral examination, and give evidence by a thesis of their ability to do work of the investigative order. In addition to the regular advanced work offered by the department, special subjects giving opportunity for original investigation will be outlined for candidates wishing to pursue them.

MATHEMATICS.— Graduate students in Mathematics must have acquired a working knowledge of the calculus, and may offer as part of their work for the Master's degree any of the subjects given by the department except the first six, but subjects 7, 9, and 10, or their equivalents, must be included. Candidates will hold themselves in readiness to be examined at the end of their studies upon any topics treated in the first six subjects, as well as upon work offered for the degree.

CHEMISTRY.—The requirements for beginning graduate work in Chemistry are the completion of subjects 1, 2, and 3, or their equivalent. Subjects 4, 5, 7, 8, 9, 10, and 12 may be counted toward the Master's degree, if they have not been counted as undergraduate work. Examination is required, and a satisfactory thesis.

PHYSIOLOGICAL CHEMISTRY. — The work in Physiological Chemistry requires in preparation a thorough foundation in inorganic and organic chemistry, including qualitative and quantitative analysis ; the ability to read scientific French and German readily ; and a thorough knowledge of the elements of physics, particularly with reference to the laws of the density of gases and fluids under heat and pressure, as well as such acquaintance with optics as will enable one to use intelligently the polariscope, the spectroscope, and the microscope.

The course is one of laboratory work wholly, under the personal advice and assistance of the instructor, and must include one original investigation, to require not less than one half-year, and to be accompanied by a satisfactory thesis upon the results of such research. The subject of this investigation may be taken from the realm of enzymes, metabolism, or hygiene. A rigid examination will also be demanded upon the principles of physiological chemistry.

PHYSIOLOGY.—Before beginning graduate work in Physiology the candidate for the degree of Master of Arts must have had at least a year's training in biology, and, besides, a knowledge of the outlines of anatomy and physiology such as may be obtained from such works as Martin's Human Body, with simple laboratory experiments. A reading knowledge of French and German is desirable, and in some cases may be necessary. The work of the year is largely practical. It involves the completion of the work in physiology required of candidates for the degree of Doctor of Medicine, and, in addition, the investigation of some simple problem which shall serve as the basis of the required thesis.

BIOLOGY.—Before beginning graduate work in Biology the student must have a good knowledge of the elements of vertebrate and invertebrate anatomy and of physiology (subjects 1 to 4 of Tufts College, or their equivalent), and must be able to use French and German. The work offered for advanced degrees is in the lines of comparative anatomy and of the histology and embryology of animals. Consequently the greatest stress will be laid upon laboratory work, but students may also take the subjects numbered 5, 8, 9, and 13.

For the degree of Master of Arts or Master of Science the student must pass a satisfactory examination in the principles of morphology, and present an acceptable thesis embodying the result of research.

ELECTRICITY.—As a preparation for graduate work in Electricity the candidate must have a good mathematical foundation, including some knowledge of differential equations, must have credit in Physics 31-1, 31-2, 31-3, and 31-7, or their equivalents, and should have completed Electricity 61-3, 61-4, and 61-5. The last three subjects may count towards the Master's degree if not already counted towards the first degree.

Of the thirty term hours required, nine may be used in the preparation of a thesis.

FELLOWSHIPS

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY.—In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowship. The income of these fellowships, each amounting to two hundred and fifty dollars annually, is awarded by the Trustees to graduate students in Natural History, upon recommendation of the Administrative Board. The conditions of the fellowships are as follows:—

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, and of ability to profit by the work to be done, as well as testimonials of good character from instructors or others. Any original article, either written or printed, may be submitted as an aid in determining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject, under the direction of a professor in the department of Natural History. He may be called upon for minor services, such as conducting examinations, but he shall not be required to teach; he may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made half in January and half in June; but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

(5) The holder of a fellowship may be eligible to a single re-election, but incumbency constitutes no claim to re-appointment.

SCHOLARSHIPS

The Trustees of Tufts College have established eleven scholarships, one in each department offering graduate work. Each scholarship gives free tuition to the incumbent, who is expected to devote himself exclusively to advanced study.

These scholarships are awarded by the Graduate Faculty, on recommendation of the heads of departments concerned, at or before the beginning of the year in which they are to be conferred. Applications must be made to the President on or before May 1 of the preceding year, and will regularly be acted upon at the June meeting of the Graduate Faculty.

TUITION

The tuition fee for the whole course for the degree of Master of Arts, or Master of Science, is *one hundred dollars*, of which *fifty dollars* is payable in advance.

THE CRANE
THEOLOGICAL SCHOOL

Faculty of the Crane Theological School*

WILLIAM LESLIE HOOPER, A.M., PH.D., ACTING PRESIDENT

LEE S. McCOLLESTER, D.D., DEAN
Packard Professor of Christian Theology

CHARLES H. LEONARD, A.M., D.D., LL.D., DEAN, EMERITUS
Goddard Professor of Homiletics and Pastoral Theology

WILLIAM H. REED, JR., A.M., SECRETARY †

GEORGE M. HARMON, A.M., D.D.
Professor of Biblical Theology, Emeritus

WILLIAM G. TOUSEY, A.M., D.D.
Professor of Ethics and the Philosophy of Theism

HENRY I. CUSHMAN, A.M., PH.D.
Instructor in Homiletics and Pastoral Care

HINCKLEY G. MITCHELL, D.D.
Professor of Hebrew and Old Testament Exegesis

ADOLF A. BERLE, D.D.‡
Woodbridge Professor of Applied Christianity

EDWIN C. BOLLES, A.M., PHD., D.D., LL.D.
Dickson Professor of English and American History

RICHARD JONES, PH.D.
Professor of English Literature

ALFRED C. LANE, A.M., PH.D.
Pearson Professor of Geology and Mineralogy

HERBERT V. NEAL, PH.D.
Professor of Zoology

HENRY C. METCALF, PH.D.
Jackson Professor of Political Science

KARL SCHMIDT, PH.D.
Professor of Philosophy

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*Below the line are printed the names of professors who, while not members of the Theological Faculty, offer subjects that are open to students of the School.

†*Ex officio*, as Secretary of the Department of Arts and Sciences.

‡Absent on leave.

CHARLES ST. CLAIR WADE, A.M.*
Professor of the Greek Language and Literature

ALBERT H. GILMER, A.M.
Assistant Professor of English

ARTHUR I. ANDREWS, PH.D.
Professor of History

ELLSWORTH S. KRANTZ
Instructor in Physical Education for men

FREDERIC W. PERKINS, D.D.
Non-resident Lecturer on New Testament

COMMITTEE ON PROMOTIONS

Acting President Hooper, *Chairman;* Dean McCollester and Prof. Tousey.

COMMITTEE ON CURRICULUM

Dean McCollester, *Chairman;* Professors Tousey, Mitchell, and Cushman.

NON-RESIDENT LECTURERS

Laymen and ministers of the Universalist and other churches, specialists in their departments, will give lectures to the students during the year.

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*Absent on leave.

The Crane Theological School

The Relation of the School to Tufts College

Crane Theological School is one of the coördinate departments of Tufts College. Students of the School are members of the College, enjoying its privileges and subject to its regulations. At an early period in the history of Tufts College it was provided by the will of Mr. Packard that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. Thomas J. Sawyer, D.D., was elected Packard professor in 1869. This was the beginning of the Theological School. In 1882 the school had developed so that its Faculty received a definite organization, and Dr. Sawyer became the first Dean, retaining the office until his retirement as Packard Professor Emeritus in 1892. He was succeeded by Rev. Dr. Charles H. Leonard who retired in 1910. From the erection of West Hall until the completion of the separate buildings of the School, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of ex-President Miner, the School was provided with Miner Hall, containing the library, class rooms, chapel, and reception room; and at the same time, largely through the efforts of the Dean, the money was obtained to build Paige Hall, a dormitory for students of the Theological School.

In 1906 the name of the Divinity School was changed to the Crane Theological School, in recognition of a gift of one hundred thousand dollars from the estate of the late Thomas Crane of New York, whose son, Albert Crane, '63, thus carried out the expressed purpose of his father.

In 1912 Lee S. McCollester, D.D., of Detroit, Michigan, was called to the office of Dean of Crane Theological School.

The New Plans for Crane

Recognizing that peculiar difficulties and radically new demands confront the Christian minister to-day, Crane Theological School frankly seeks to adapt its discipline to the new conditions. This, quite naturally, has led to the adoption of a distinct and somewhat distinctive ideal or aim. While rigorously faithful to the fundamentals of a liberal culture, and alert to discover and foster special interests and gifts, the primary aim will be *practical* rather than *academic*—to turn out, not men distinguished for varied and curious learning, but men thoroughly informed as to the problems of the hour, in sympathetic touch with modern needs, trained and equipped for moral and religious leadership in the seething life about us.

For the present, emphasis will be laid on two courses, which, for convenience, may be designated the Graduate B.D. course, and the Undergraduate B.D. course.

The Graduate course is the traditional three years' course for men who have received regular collegiate training—reorganized in some degree, however, as respects subjects, but more especially as respects the distribution of emphasis. In the case of students of unusual attainments, it may be possible to take the A.M. degree along with the B.D. degree. While Hebrew or Greek is in general advised, it is possible to substitute for these, a modern language, or a subject in either philosophy, literature, or economics. In the last year, the student may be allowed to do part of his work in a parish or social settlement, but under the direction of the faculty, and dependent upon especial excellence in his previous work. For graduation there is required a credit of 100 hours, 60 of which must be of the grade of C, or better. The subjects for each year are to be selected from the following lists.

SYNOPSIS OF THE THREE YEAR COURSE

First Year

Greek or Hebrew.

Old Testament. Introductory—History and Literature.

New Testament. Life of Jesus and the History of Apostolic Christianity.

Church History. From the beginning of Christian Church to the Reformation.

Homiletics. English Composition; History of Preaching; Study of Masterpieces of Pulpit Eloquence.

Religious Psychology. Personal Influence; Mental Hygiene; Intellectual Efficiency; Religious Phenomena.

Religious Pedagogy. Sunday School Methods; Child Study; Religious and Moral Education.

Logic. Deduction; Induction; Method; Argumentation.

Practical Ministry. Problems of Modern Church; Universalist History and Theology.

Second Year

Greek, Hebrew, or German.

History of Religious Thought in Europe. Reformation and History of Protestantism.

Old Testament. Study of Special Books for Literary and Ethical Values

New Testament. Study of Special Books for Ethical and Theological Values.

Ethics. Philosophical; the Moral Nature; Springs of Conduct; the Moral Ideal; Ethical Theory and the Moral Life.

Comparative Religions. Ideas and Work of various Eastern Religions; Comparison with Christianity.

Sociology. Theories; Economics; Practical Work in Social Centers.

Practical Ministry. History of Modern Sects; The Modern Universalist Church; Laws and Conventions.

Third Year

Applied Christianity. History and Development; Social Service; the Church in Modern Society.

Religious Movements in Europe and America.

The Philosophy of Religion. Elements; the Final Problem; Evidence of a Rational and a Moral Order; Theism and Anti-Theistic Theories.

The Bible and Modern Life.

Practical Ministry. Laboratory work in a Parish or Social Settlement; Study of Architecture; Church Music and Hymnology; Scientific Management Applied to Church Work.

Homiletics. Preaching; Liturgics and Worship; Oratory; Sermons; Poetry and Essay for Enrichment of Preacher's Thought.

Systematic Theology. Ideas and Problems of Christian Theology; Types of Christian faith; Christ and the Church.

The Universalist Church. History and Doctrines.

Research Work in Sociology or Economics. This is carried on at Social Settlements under the direction of professors.

Electives.

SYNOPSIS OF THE FIVE YEAR COURSE

This course is designed to meet the needs of capable and earnest men who aspire to the Christian ministry, but whose circumstances forbid their taking the Graduate B.D. course, requiring, as it does, four years of preliminary college training. It admits of the introduction of studies not strictly professional, but of fundamental character and of high cultural and disciplinary value for the minister. The conditions of admission to this course are the same as for the School of Liberal Arts. The expectation is that five years spent under a single faculty, with a clearly defined objective, where subjects are made to succeed each other in logical order, and with persistent reference to practical requirements, will afford a very effective equipment for the working preacher and pastor. This course, it is anticipated, will justify itself by the severe intellectual training it compels, and by the fact that it gives practically the equivalent of the former six-year combined A.B. and B.D. course,—with the advantage that from the outset it lays emphasis on the religious purpose of the whole course. A further aim of this arrangement is more deeply to impress the student with the special qualifications the profession calls for in personality and equipment, and to permit the Faculty earlier to determine his fitness for his exacting duties as an efficient religious leader. Students who give small promise of efficiency will early be advised to enter work for which they are better fitted. Students of high standing and sufficient maturity will be permitted to devote the last year of the course to practical work in social settlement or parish, either as assistant or pastor. This work will be under the supervision of the Faculty. Students will be required to report at stated intervals, present theses on assigned subjects, and may at all times avail themselves of the counsel and sympathetic support of the Faculty. For graduation in this course a student must have a credit of 140 term hours for the four years in residence, and 70 of these must be of the grade of C, or better. The subjects are to be selected from the following lists.

First Year

English. English 1 and 2; Literature and Composition.

Science. Biology; Organic Evolution; Anthropology; Physiology.

Old Testament. General Survey of Old Testament; Literature and History.

New Testament. Life and Teachings of Jesus.

The Rise and Development of The Early Christian Church.

One Language. Modern or Ancient.

Logic. Deduction; Induction; Method; Argumentation.

History. General Medieval; History 1: History of the New East.

The Modern Liberal Church Movements.

Second Year

English. History of Religious Literature; the English Bible and General Literature; Sermonic Composition.

Old Testament. Study of Special Books in Relation to Jewish History and Ethics.

New Testament. Theology of Paul. New Testament as Literature and Ethics.

Ethics. Philosophical; The Moral Nature; Springs of Conduct; the Moral Ideal; Ethical Theory and the Moral Life.

History of the Christian Church. European; Catholic and Protestant.

Religious Pedagogy. Sunday School Methods; Child Study; Religious and Moral Education.

Psychology. Elementary and Applied; Psychology of Religion.

European Liberal Religious Movements.

Third Year

Economics. The Principles of Economics; Their Applications to the Church and Social Life.

Comparative Religion. Ethnic Religions; History; Doctrines; Religion of Greece, and Relation to Christianity.

Homiletics. Oratory; Preaching; Study of Local Preachers; Current Religious Literature; Sermon Making; Psychology of Preaching.

Practical Ministry. Study of City Churches; Study of Rural Churches; Work in Connection with Neighboring Churches; Laboratory or Practical.

The English Bible. The English Bible studied as Literature; Its Drama, Poetry, etc.

Old Testament Ethics. Studies of men and epochs of history.

New Testament Doctrines. Teachings of Jesus and Paul.

History of Philosophy. Leading Questions; Development of Thought as Respects Fundamental Issues.

Systematic Theology. The Essential Affirmations of Christian Faith—Their Origin and Evolution.

Fourth Year

Sociology. Development of Society; Modern Theories of Sociology; Laboratory Work in Settlements, Christian Churches and Social Service.

Applied Christianity. Christian Ethics; Modern Problems; Church as a Social Instrument; Church in Economic Relations; The Teachings of Jesus and Modern Society.

Philosophy of Religion. Elements; The Final Problem; Evidence of a Rational and a Moral Order; Theism and Anti-Theistic Theories.

Modern Sects and Doctrines. Church Unity; Leading Missionary Movements and Men.

Practical Ministry. Organization of Church Work; Minister's Personal Life; Church Music; Church Architecture; Hymnology and Liturgics; Scientific Management Applied to Churches.

Homiletics. Sermon, Composition and Delivery; Lecture Writing; Press Writing; Study of Local Preachers and Lecturers.

Literature. Bible in Modern Life; Poetry and Essay for Enrichment of Preacher's Thought.

Universalist Church. Policy; Theology; and Opportunity.

Fifth Year

The work of the fifth year will vary according to the needs of the candidate and his ability shown in previous years. It is, however, planned that some of his work shall be done at a social settlement or in a parish under the direction of a minister who will carry out the desires of the College in the further work of the student. During this year the student will follow lines of study prescribed by the Faculty and prepare theses on subjects connected with his year's work. Examinations may be required, and it may be best for the student to come to the College for some of his work. The Faculty will aid the student in the problems that rise in connection with his work. It may be possible that some students will prefer to use this year in residence at the School for work in connection with the College, looking forward to the degree of A.B. Special attention during this year will be given to parish problems and administration.

NOTE: — Some students having entered upon a six year combined A.B. and B.D. Course before these new plans were introduced are allowed to finish their program as formerly outlined, and are so enrolled.

Departments of Instruction

Below are outlines of some of the courses as now given, but the program of courses and the plans of work will be much extended for 1914–15, and an announcement will be issued early next summer.

58 OLD TESTAMENT

The constant aim in this department will be to give the student such a knowledge of the Hebrew Scriptures as will enable him personally to appreciate their varied excellence and utilize them as a source of inspiration and instruction in his ministry. The first step in this direction is the acquisition of a working knowledge of the Hebrew language; the second a thorough course in exegesis. Those who take these courses will be able to study with profit such general subjects as Introduction to the Old Testament, History of the Hebrews, and Ethics, or Theology of the Old Testament, as they are offered.

SUBJECTS

3. The Hebrew Language. First Semester: the elements of Hebrew etymology, with exercises in reading and writing Hebrew. Second Semester; readings from the books of Judges and Samuel, with notes and references on Hebrew syntax.

[6. The Narrative Literature. A comparative study of the historical books to determine their relative value from the literary, historical, and religious standpoint. *Two hours*]

[7. The Prophetic Literature. An examination of selections from the works of the principal prophets, to ascertain the literary and doctrinal peculiarities of each, and his place in the development of Hebrew prophecy. *Two hours.*]

8. The Didactic Literature. The books of Job, Proverbs, and Ecclesiastes, and their significance for the history of Hebrew thought. (F)

9. The Lyric Literature. Early songs; select psalms of devotional or theological importance; the Song of Solomon and its structure and meaning.

[10. The Ethics of the Old Testament. A survey of the development of moral ideas among the Hebrews, with lectures and papers. *One hour.*]

11. Introduction to the Old Testament. An inquiry into the age, structure, authorship, and history of the several books, with lectures and papers.

68 NEW TESTAMENT

This department has three divisions: History, Criticism, and Exegesis; and for students who have not had Greek, a course in New Testament Greek is provided. The historical course covers the two centuries preceding the ministry of Jesus, with the aim to give the student a knowledge of the conditions under which Christianity entered the life of the world, the ministry of Jesus, and the rise and development of the Apostolic Church. The method pursued in this study is to refer the student to authorities dealing with the topics assigned and notes given by the instructor. In Criticism the student deals with the sources of the text and the methods for determining its correctness, also with the facts of the different New Testament writings. In this the method pursued is the same as in the study of the history. In Exegesis the work is of reading selected passages from the Greek of the Synoptic Gospels, the Fourth Gospel and the Pauline Epistles. The instructor gives the student from time to time notes as to the principles of exegesis, requiring him to exemplify them in his work. He is also taught the discriminating use of commentaries with the aim to form the habit of independent and correct interpretation. In New Testament 4 the subject taught is the application of essential teachings of the New Testament to the conditions and needs of our modern social and individual life; and the method pursued is to assume the results of exegesis, divest them of their local and temporal elements, arriving at what is permanent, and endeavor to find their parallels in the life of to-day. The aim is to furnish the student with topics and material for sermon work, and to equip him for biblical preaching.

SUBJECTS

1. History of the Beginnings of Christianity.
2. New Testament Criticism.
3. New Testament Exegesis and Theology.
4. New Testament Greek.
5. New Testament Ethics.

56 HISTORY OF RELIGIONS

The department of History of Religions deals with a special phase of the general subject of history, showing the growth of religion, and its relation to civilization — including politics, social life, philosophy, literature, art, and personal character. See also the subjects listed in the departments of Old Testament and New Testament.

SUBJECTS

4. History of Religions. This course seeks to give an outline of the origin and development of religion from the tribal cults of primitive races to the great ethnic religions, excluding Christianity. It will deal with the evolution from the primitive stages of social life and culture to the higher forms of religious organization, as shown among the Hebrews, the Chinese, the Japanese and the Egyptians. It will present the religions of the Semites in their various groups. It will outline the religion of the Greeks, Romans and Persians, and the systems of India, both ancient and modern. The purpose will be to present a comparative view of the social-religious development of the world prior to the advent of Christianity. Lectures, thesis and outlines of reading.

5. History of the Christian Religion. The course will present a review of the rise and expansion of the Christian religion and its relation to the historical, social, intellectual and cultural movements of the world to the present time. Its differentiation into churches and sects. Its influences on life and civilization and its own modifications with the changes in civilization. It will trace the permanent and the transient forces in Christian history. Lectures, theses and outlines of reading.

6. Special Investigations in the History of Religion. A course in research into particular questions of the origin and development of religion. This course is open only to students who have taken History of Religions 4 and 5 and who have a reading knowledge of French.

7. Ancient and Modern Universalism.

16 ETHICS AND PHILOSOPHY OF THEISM

The several courses in Ethics and the Philosophy of Theism offered by the School of Liberal Arts are open to theological students, and are included in the curriculum of the Theological School. For detailed statement of subjects, see Philosophy 3, 6, 7, 55, and 15 in the statement of that department in the School of Liberal Arts.

86 THEOLOGY

The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose, attempt is made to co-ordinate the products of biblical theology, religious history, natural theology, ethics, and, indeed, of all the proper sources of material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The method includes several stages: —

1. The history of important doctrines and creeds, as a general introduction.

2. *a.* Special history of the topic in hand, with analysis and classification of opinions and theories according to their logical relations.

b. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.

c. The organization of the results into a scientific product.

d. Illustrative applications to practical problems,—ecclesiastical, political, social, and personal.

SUBJECTS

1. Historical Introduction.

[2. Theology; anthropology; soteriology; eschatology; critical study of modern doctrines.]

3. The Philosophy of Universalism.

76 APPLIED CHRISTIANITY

Christianity will be considered with special reference to the practical problems of life, individual and social, under the three general aspects of religious education, religious expansion and social regeneration. The subjects considered will deal with the religious view of every aspect of modern society.

SUBJECTS

5. Religious Pedagogy. Various problems of moral and religious education; Sunday School organization and methods.

6. Home Missions. Immigration; the race problem in America; the church and the rural community.

7. Foreign Missions. Sociological aspects of Missionary endeavor in selected countries. For the current year, China and Japan.

[8. The Genetic History of Social Ideas in the Light of Christian Teaching. The Rise and Organization of Society and the Development of Social Orders. The Evolution of the Social Ideal. The Morphology of Social Ideas under Christian Influence. The Social Sources of Christian Institutions. (F)]

[9. The Christian Church as a Social Instrument. The functions of the primitive church and the expansion of church activities, educational, political and therapeutic. Modern re-distribution of these functions and re-adjustment to the industrial and economic needs of democratic society.]

10. Ethical Aspects of Modern Industrial Organization. The comparative examination of the stages of industrial development. Contrasts between mediæval and modern conceptions of industry. The social interpretation of industry. The rise of sociological jurisprudence and its significance in the future of industry.

11. The Economic Principles of a Christianized Society. Political and Economic principles examined in the light of the teaching of Jesus Christ. The fundamental laws of Christian society stated and compared with prevailing systems of political economy. Possibilities and limitations of a Christian state.

82 HOMILETICS

The work consists of studies in constructive homiletics; the varying conception of preaching as determined by the person and the time; helps in the preparation of sermons from the study of history, literature, and character; the preparation and delivery of sermons; practice in extempore discourse; the cultivation of power in preaching; the study of representative preachers.

SUBJECTS

1. Introductory Course in Homiletics. (*a*) Lectures and Recitations on the basis of text book, Hoyt's "The work of Preaching." *One hour.* (F) (*b*) Sermon Making. Short extempore and written sermons on texts or topics chosen by students or assigned by the instructor. *One hour.* (*c*) Cultural study of the words and life of Christ as fundamental preparation for preaching. *One hour.* (*d*) Conferences.

2. Advanced course in Homiletics. (*a*) Lectures and Recitations on the basis of text book, Hoyt's "The Preacher." *One hour.* (F) (*b*) The art of preaching. Practice in the making of sermons, and in their delivery in class. *One hour.* (*c*) Pastoral Care. Studies in the conduct of Public Worship, and of special services on the basis of Dean Leonard's Book of Prayer. Baptism, Confirmation, the Holy Communion, Marriages and Funerals will be considered; also, Parish Calls and other pastoral functions with Gladden's "The Christian Pastor" as a book of reference. *One hour.* (S) (*d*) Conferences.

THE PROFESSION OF THE MINISTRY

Lectures on Ministerial habits; scientific management of parishes; quiz classes; case work; reading courses; church architecture; Universalist polity; Interdenominational relations.

Supplementary Information

[See also the section devoted to General Information in Tufts College Catalogue.]

RELIGIOUS OBSERVANCES

The students in the Crane Theological School attend daily morning prayer in Goddard Chapel; and religious services, in the care of the students, are held in Packard Hall from time to time.

SUPPLEMENTARY LECTURES

Lectures which bear upon the general work of the Christian ministry, and upon special subjects of study, are given at intervals throughout the year by well-known clergymen and others of the vicinity.

The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the School to encourage the judicious use of these important instrumentalities of culture.

LICENSE TO PREACH

The regular time for applying for licensure is a year and a half before graduation. Before that time the members of the Theological School are not allowed to preach.

BUILDINGS FOR THE USE OF THE THEOLOGICAL SCHOOL

The building formerly known as Middle Hall has been entirely remodelled and fitted for the use of the Theological School under the name of Packard Hall. It contains five well-lighted lecture rooms, a chapel, a library, and offices for the members of the Faculty.

Paige Hall, the dormitory of the Theological School, contains thirty-six single rooms, heated by steam and lighted by gas and electricity. Each room is provided with all necessary furniture — except sheets, blankets, pillow-cases, and towels.

EXPENSES AND PECUNIARY AID

Students in the Theological School are charged *one hundred dollars* annually for tuition. This charge includes the privilege of occupying a room in Paige Hall, and provision for heating and caring for it.

The following scholarships are assigned exclusively to theo ogical students; certain prizes are also available under conditions, especially as described under "General Information."

The General Convention of Universalists aids students by free scholarships, not exceeding one hundred and twenty-five dollars a year to any one student, subject always to the recommendation of the Faculty of the Theological School. Those students, also, who are in the regular course are permitted to preach, under the direction of the Faculty, during the year-and-a-half preceding their graduation. In this way they may add to their pecuniary resources.

THE GREENWOOD SCHOLARSHIP.—The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given to that member of the advanced class in homiletics who, maintaining a high standard of work as a student, has made in all the work in Homiletics and Oratory the most satisfactory progress.

THE JOHN MURRAY SPRAGUE AND ELIZA FLETCHER SPRAGUE SCHOLARSHIP.—The income of two thousand dollars, bequeathed by the late John M. Sprague, is appropriated to the aid of needy and deserving students in the Crane Theological School, preference being given to any student, otherwise eligible, who is a direct descendant of the donor's father, John Sprague.

THE DOCKSTADER SCHOLARSHIP.—The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The following scholarships amount to fifty dollars each:—

THE WHITTEN SCHOLARSHIP.—Founded by Mrs. Maria F. Whitten, of Cambridge.

THE HOLT SCHOLARSHIP.—Founded by Miss Celia Holt, of Stafford, Conn.

THE HENRY L. BALLOU SCHOLARSHIP.—Founded by Susan Ballou, of Woonsocket, R. I.

TWO BRADLEE SCHOLARSHIPS.—Founded by the late Caleb D. Bradlee, D.D., of Brookline.

TWO GOLDTHWAITE SCHOLARSHIPS.—Founded by the late Willard Goldthwaite, of Salem.

THE SARAH ELIZABETH PERKINS SCHOLARSHIP.—Founded by James D. Perkins, of Brooklyn, N. Y.

TWO LUCIUS R. PAIGE SCHOLARSHIPS.—Founded by the late Lucius R. Paige, D.D., of Cambridge, Mass.

TWO ANN M. PAIGE SCHOLARSHIPS.—Founded by the late Ann M. Paige, wife of the late Rev. Lucius R. Paige, of Cambridge, Mass.

FOUR CATHERINE CONANT SCHOLARSHIPS.—Founded by the late Mrs. Catherine Conant, of Newark, N. J.

The income of five hundred dollars, given by REV. JOHN VANNEVAR, is used in the purchase of books for the Department of Homiletics.

JACKSON COLLEGE

Faculty of Jackson College

WILLIAM L. HOOPER, A.M., PH.D., ACTING PRESIDENT.

CAROLINE STODDER DAVIES, A.B., DEAN
Professor of Greek

WILLIAM H. REED, JR., A.M., SECRETARY
Professor of Modern Languages

LIZZIE MAUD CARVILL, A.B., M.D.
Director of Physical Education

ALICE E. HARRINGTON
Instructor in Physical Education

The instructing staff is identical with that of the School of Liberal Arts of Tufts College, except in the Department of Physical Education.

Standing Committees

ADMISSIONS: Dean Davies, *Chairman;* Professors Wren and Reed.

ABSENCES AND PETITIONS: Dean Davies, *Chairman;* Professor Reed.

SCHOLARSHIPS AND AIDS: Acting President Hooper, *Chairman;* Dean Davies, Professors Wren, Anthony, McCollester, and Reed.

CATALOGUE: Acting President Hooper, *Chairman;* Dean Davies, Professor Wren.

STUDENT EMPLOYMENT: Dean Davies, *Chairman;* Professors Gilmer and Wren.

PROMOTIONS: Dean Davies, *Chairman;* Professors Wren, Fay, Metcalf, and Andrews.

STUDENT ORGANIZATIONS: Dean Davies, *Chairman;* Professors Fay and Gilmer.

Jackson College

Unlike most of the women's colleges affiliated with colleges for men, Jackson College is the result, not of a slow growth whose beginnings were almost imperceptible, but of a metamorphosis which seemed to ignore all precedents.

Jackson College for Women was authorized by act of the Legislature of Massachusetts in 1910, and was opened on September 22nd of the same year. It is a further step in the development of the work of Tufts College in providing for the collegiate education of women. The beginning was made when Tufts opened all its courses to women on the same terms as to men in 1893. Sixteen years of experience seemed to show that it was possible to do still better work for women than was being done under a system of co-education. In 1907 the annual report of the President of Tufts College called the attention of the Trustees to what he considered the failure of the co-educational experiment at Tufts. Two years later a committee was appointed by the Trustees to investigate and report upon the matter of co-education in Tufts College. After careful discussion this report was accepted at a meeting of the Trustees, April 14, 1910, and application was made to the Legislature for the necessary charter amendments. As a department of Tufts College, Jackson College is therefore able to offer to its students a combination of the advantages of a woman's college and a co-educational college with comparative freedom from the peculiar disadvantages of each system.

The courses offered in Jackson College are identical with those offered in the School of Liberal Arts; and are given by the same instructing staff.

The requirements for the degrees of A.B. or B.S. are the same as in Tufts College. The diploma is certified over the signature of the President and Secretary of the Trustees of Tufts College as similar and equal to that issued under like name and upon similar conditions to the students of Tufts College.

GRADUATE WORK

No graduate courses are offered in Jackson College, but women are admitted to the Graduate School of Tufts College.

EXPENSES

The tuition charges and incidental expenses are the same as in Tufts College. Room rent varies from $40 to $85, according to the location of rooms.

REGISTRATION, REGULATIONS, ETC.

Full information concerning the administration and organization of Jackson College will be found in a special pamphlet to be had on application to the Dean of Jackson College, Tufts College, Mass.

SCHOLARSHIPS

In addition to the Scholarships named below, a certain proportion of the Scholarship funds of Tufts College has been set apart for the students of Jackson College. The conditions and form of application are the same.

FIVE JOHN AND LUCY H. STOWE SCHOLARSHIPS.—Five scholarships for women students, founded by the late Mrs. Lucy H. Stowe of Lawrence.

TWO MARY AND LUTHER GILBERT SCHOLARSHIPS.—Founded by Mrs. Mary G. Knight, of Roxbury, for the benefit of women.

ALPHA OMICRON PI PRIZE SCHOLARSHIP.—Founded by the alumnæ of the Tufts Chapter of Alpha Omicron Pi, and given to that woman in the senior class who shall have made the best record in the prescribed work of the A. B. Course.

ALPHA XI DELTA PRIZE SCHOLARSHIP.— Founded in 1910 by the Lambda chapter and Alumnæ of Alpha Xi Delta and given to that woman who, at the end of the Junior year holds the highest rank in the Course of Teaching.

CHI OMEGA PRIZE SCHOLARSHIP:—Founded in 1913 by the Alumnæ of the Chi Alpha Chapter of Tufts College, to be given annually to a student of Jackson College who at the end of her Junior year has attained commendable scholarship in Economics and Sociology and has shown a keen interest in Social Service. The purpose of this scholarship is to encourage practical work during her Senior year.

LOANS AND AIDS

The Woman's Universalist Missionary Society of Massachusetts maintains for the use of students of Jackson College a fund, the interest of which shall be used for scholarships for Universalist young women. These scholarships of $100 value it is hoped the beneficiary will, when able, return to the "Tufts College Fund for Women" for the benefit of another young woman.

The Hettie Lang Shuman Memorial Fund was founded by Mr. A. Shuman, who presented one thousand dollars to the College, in memory of his wife. The interest of this fund is annually expended in aiding deserving women students.

The Massachusetts Society for the University Education of Women has at its disposal a small loan fund, and also a limited amount of money devoted to scholarship purposes for regular students in the upper classes. Inquiries concerning both of these may be made of the Dean.

BUILDINGS

Miner Hall contains the office of the Dean, class rooms, reception and locker rooms, bookstore, etc.

The Library and laboratories are used in common with Tufts College.

The daily chapel service is held in Goddard Chapel at 8.30.

Dormitory accommodations are provided for women in Metcalf Hall, Start House, and Richardson House.

Students of Jackson College are required to reside in the dormitories or with their families, except by special permission of the Dean.

THE MEDICAL SCHOOL

Faculty of the Medical School*

WILLIAM LESLIE HOOPER, A.M., Ph.D.
Acting President Tufts College

CHARLES FAIRBANK PAINTER, A.B., M.D. . 372 Marlborough St.
Professor of Orthopedic Surgery and Dean

HAROLD WILLIAMS, A.B., M.D., LL.D. . . . . . . 528 Beacon St.
Professor of the Theory and Practice of Medicine and Dean of the Medical and Dental Schools, Emeritus

FREDERIC MELANCTHON BRIGGS, A.B., M.D.
31 Massachusetts Ave.
Professor of Surgery and Secretary of the Faculty

JOHN LEWIS HILDRETH, A.M., M.D., LL.D. . . 55 Fletcher St.,
Professor of Clinical Medicine, Emeritus Winchester

ERNEST WATSON CUSHING, A.B., M.D., LL.D. 168 Newbury St.
Professor of Abdominal Surgery and Gynecology, Emeritus

EDWARD OSGOOD OTIS, A.B., M.D. . . . . . . 381 Beacon St.
Professor of Pulmonary Diseases and Climatology

MORTON PRINCE, A.B., M.D. LL.D. . . . . 458 Beacon St.
Professor of Diseases of the Nervous System, Emeritus

WILLIAM MERRITT CONANT, A.B., M.D. . 486 Commonwealth Ave.
Professor of Clinical Surgery

FRANK GEORGE WHEATLEY, A.M., M.D. . . . North Abington
Professor of Materia Medica and Therapeutics

HENRY BECKLES CHANDLER, C.M., M.D. . . . 34½ Beacon St.
Professor of Ophthalmology, Emeritus

EDWARD BINNEY LANE, A.B., M.D. . . . . . . 419 Boylston St.
Professor of Mental Diseases

EDWARD MARWICK PLUMMER, M.D. . 5 Adams St., Charlestown
Professor of Otology

GEORGE HAMLIN WASHBURN, A.B., M.D. . 377 Marlborough St.
Professor of Obstetrics, Emeritus

JOHN JENKS THOMAS, A.M., M.D. . . . . . . 88 Bay State Road
Professor of Neurology

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* The names of the Faculty of Medicine, after the President, the Dean, and the Secretary, are arranged in the order of academic seniority. The post-office address is Boston, Mass., unless otherwise indicated.

JOHN LINCOLN AMES, A.B., M.D. . . . . 87 Chestnut St.
Associate Professor of the Theory and Practice of Medicine

WILLIAM ALLEN BROOKS, Jr., A.M., M.D. . . . . 167 Beacon St.
Professor of Clinical Surgery

WILLIAM ELISHA CHENERY, A.B., M.D. . . 222 Huntington Ave.
Professor of Laryngology

CHARLES MELVILLE WHITNEY, M.D. . 386 Commonwealth Ave.
Professor of Genito-Urinary Diseases

GEORGE ANDREW BATES, M.Sc., D.M.D. . . . . . . Auburndale
Professor of Histology

EUGENE THAYER A.M., M.D. . . . 2683 Washington St., Roxbury
Demonstrator of Anatomy

GEORGE VAN NESS DEARBORN, A.M., M.D., Ph.D. 6 Mason St.,
Professor of Physiology Cambridge

GEORGE WARTON KAAN, M.D. . . . . 419 Boylston St.
Professor of Clinical Gynecology

EDMUND WRIGHT CLAP, A.B., M.D. . . 390 Commonwealth Ave.
Associate Professor of Ophthalmology

WILLIAM ROBIE PATTEN EMERSON, A.B., M.D. 657 Boylston St.
Assistant Professor of Children's Diseases

FRANCIS JOSEPH KEANY, M.D. . . . . 73 Marlborough St.
Professor of Dermatology

EDWARD NORTON LIBBY, A.B., M.D. . . . . . . 638 Beacon St.
Assistant Professor of Theory and Practice of Medicine

ARTHUR WILLARD FAIRBANKS, M.D. . . . . . 591 Beacon St.
Assistant Professor of Neurology

CHARLES DAVISON KNOWLTON, M.D. . 574 Warren St., Roxbury
Assistant Professor of the Theory and Practice of Medicine

ARTHUR LAMBERT CHUTE, M.D. . . . . . 350 Marlborough St.
Assistant Professor of Genito-Urinary Surgery

LEO VICTOR FRIEDMAN, A.B., M.D. . . . . 425 Marlborough St.
Assistant Professor of Obstetrics

TIMOTHY LEARY, A.M., M.D. . . . 44 Burroughs St., Jamaica Plain
Professor of Pathology and Medical Jurisprudence

STEPHEN RUSHMORE, A.B., M.D. . . . . . . 407 Marlborough St.
Associate Professor of Gynecology

ALFRED WILLIAM BALCH, PH.G., M.D. . 44 Linden St., Brookline
Professor of Medical Chemistry and Toxicology

HARRY HOMER GERMAIN, M.D. . . . . . . 416 Marlborough St.
Assistant Professor of Anatomy

ELWOOD TRACY EASTON, M.D. . . . . 209 Newbury St.
Professor of Ophthamology

ELMER WALTER BARRON, A.B., M.D. . . 300 Pleasant St., Malden
Assistant Professor of Children's Diseases

OLGA CUSHING-LEARY, M.D. . . . 44 Burroughs St., Jamaica Plain
Assistant Professor of Pathology and Bacteriology

LOUIS MAHLON SPEAR, A.B., M.D. . . . . 483 Beacon St.
Assistant Professor of Theory and Practice of Medicine

FRANK EUGENE HASKINS PH.G., M.D. . . 204 Huntington Ave.
AssistantProfeszor of Materia Medica and Therapeutics

FRANK HOWARD LAHEY, M.D. . . . . 638 Beacon St.
Assistant Professor of Clinical Surgery

ARTHUR RONALD KIMPTON, M.D. . . . . . 86 Bay State Road
Assistant Professor of Surgery

OTHER INSTRUCTORS

WALTER ELMORE FERNALD, M.D. . . . . Waverley
Clinical Lecturer in Mental Diseases

EDWARD LAMBERT TWOMBLY, A.B., M.D. 416 Marlborough St.
Instructor in Clinical Gynecology

FRANCIS JOSEPH KELEHER, A.M., M.D. 1345 Center St., Newton
Instructor in Medical Jurisprudence

ELMOND ARTHUR BURNHAM, A.B., M.D., . 144 Huntington Ave.
Instructor in Clinical Medicine

CHARLES BALFOUR DARLING, A.B., M.D. . . . 50 Townsend St.
Instructor in Abdominal Surgery and Clinical Gynecology Roxbury

WILLIAM PEARCE COUES M.D. . . . . . 31 Massachusetts Ave.
Instructor in Surgery

FREDERICK WINSLOW STETSON, A.B., M.D. . . 504 Warren St.
Instructor in Clinical Medicine

EDWARD ELIPHALET THORPE, M.D. . . . . . 711 Boylston St.
Instructor in Chemical Pathology

HENRY FOWLER RANSFORD WATTS, M.D. . 6 Monadnock St.
Instructor in Clinical Medicine and Instructor in Theory and Practice Dorchester

WILLIAM JOSEPH DALY . . . . 31 Massachusetts Ave.
Assistant in Neurology

GEORGE HALE RYDER, PH.B., M.D. . . . . 427 Marlborough St.
Assistant in Ophthalmology

JOSEPH HENRY SAUNDERS, A.B., M.D. . . 581 Broadway, Everett
Instructor in Clinical Medicine

FRANK PERCIVAL WILLIAMS, M.D. . . . . 419 Boylston St.
Instructor in Rectal Diseases

GUY MONROE WINSLOW, A.B., PH.D. . . . . 145 Woodland Rd.,
Instructor in Histology Auburndale

WILLIAM HERBERT GRANT, M.D. . . . . 293 Newbury St.
Instructor in Clinical Gynecology

JAMES WILLIAM HINCKLEY, M.D. . . . . . . 419 Boylston St.
Instructor in Clinical Gynecology

FREEMAN AUGUSTUS TOWER, A.B., M.D. . . Burbank Hospital,
Lecturer in Neuropathology Fitchburg

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Instructor in Dermatology

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Instructor in Genito-Urinary Diseases

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Assistant Demonstrator of Anatomy

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RUSSELL B. SPRAGUE, M.D. . . . . Wellesley Hills
Assistant in Histology

ALBERT WARREN STEARNS, M.D. . . . . 74 Fenwood Road
Assistant in Mental Diseases

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Assistant Demonstrator of Anatomy

ERLE D. FORREST, M.D. . . . Rhode Island Hosp., Providence, R. I.
Assistant in Physiology

LOUISE E. PHANEUF, PHARM.D. M.D. . . . . . Carney Hospital, Roxbury
Assistant in Physiology

HOLLIS LESTER SEAVEY, M.D. . . . . . . 1 Frost St., Cambridge
Instructor in Clinical Medicine

OTHER OFFICERS

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Assistant Treasurer

EUGENE EVERETT SHEPARD . . . 43 Boston Ave., W. Medford
Bursar

LINA A. MAYO . . . . Milton
Stenographer

LILLIAN M. TATTAN . . . . Somerville
Clerk to Secretary

STANDING COMMITTEES OF THE MEDICAL SCHOOL

The Dean and the Secretary are members of all standing committees, *ex officiis.*

ADMINSTRATION.—The President, Drs. Wheatley, Conant and Leary.

NOMINATIONS. — Drs. Wheatley, Lane, and Whitney.

LIBRARY. — Drs. Otis, Howe, and Cushing.

COURSE OF INSTRUCTION.—The President, Drs. Ames, Conant, Friedman, Wheatley, Chenery, and Bates.

WOMEN'S ADVISORY COMMITTEE. — Drs. Elizabeth A. Riley, Olga Cushing-Leary, and Edna Weil-Dreyfus.

SPECIAL COMMITTEE

HOSPITAL COMMITTEE. — Drs. Conant (Chairman), Otis, Wheatley, Whitney, Painter and Germain.

LABORATORY ASSISTANTS

Anatomy

WILLIAM E. BROWNE, M.D.	Boston
ALFRED W. BERR	Rockville, Conn.
JAMES H. ERLENBACH	Dorchester
ROY J. HEFFERNAN	Somerville
RICHARD B. LEITH	Greenfield
ALEXANDER MILEAU, JR.	Lewiston, Me.

Physiology

ALFRED E GALLANT	Waltham
JOHN DUFF, JR.	Charlestown

Tufts College Medical School

416 Huntington Avenue
Boston, Mass.

Tufts College Medical School was established in Boston in 1893. It is co-educational, women being admitted upon the same terms as men. In its first year there were six members of the Faculty, and seventeen other instructors, or twenty-five in all. In the session 1913-14, there are thirty-five members of the Faculty and seventy-two other instructors, or one hundred and seven in all. In its first year there were eighty students; in the session 1913-14 there are 312 students. In its first year there was one clinic connected with the school; in the session 1913-14 there are fourteen clinics. The school was first located in rooms at 188 Boylston Street, where it remained three years, when an enrollment of 174 students made larger quarters necessary. Temporary accommodations were procured for the session 1896-97 in the building formerly occupied by the Chauncy Hall School, while a building was in process of construction on Shawmut Avenue. This building was occupied in the session 1897-98, and it was believed that it would meet the school's needs for a number of years. At the end of three years this building was found to be inadequate to the constantly increasing number of students, and to the constantly increasing requirements of medical education. A new building was erected on Huntington Avenue, and was occupied in the session 1901-02. Increasing requirements having necessitated more commodious quarters, the building has been enlarged and remodeled at an expense of $50,000. A fourth story has been added, and the building is now completely equipped with every facility for teaching Medicine in accordance with present requirements. There are six lecture rooms, the largest seating 400, the smallest seating 100, and each having the most modern seating arrangement. On the second, third, and fourth floors, extensive laboratories have been provided which give every facility for teaching Pathology, Bacteriology, Physiology, Histology, Chemical Pathology, Chemical Physiology, Neuropathology, Hematology and Pharmacology. Private research laboratories are connected with each general laboratory. The building has been made complete in every respect. It is heated and ventilated throughout by both the direct and indirect system, and is lighted by electricity. The laboratories have been arranged to give the best natural light. The lecture rooms have been planned to combine modern seating arrangements with the best acoustic properties, and are thoroughly equipped with opaque projection and lantern slide apparatus. The building is on the line of the Huntington Avenue Subway cars (except the Roxbury and Dorchester lines). All exercises are conducted at the school building in Boston and at the hospitals.

General Information

CLINICAL ADVANTAGES

Boston, as the largest city in New England, offers unusual facilities to the student of medicine. The amphitheatres of the Boston City Hospital, the Massachusetts General Hospital, and the Massachusetts Charitable Eye and Ear Infirmary, are open to students, and opportunity is thus afforded for witnessing the more extensive surgical operations.

Clinics are held at the Boston City Hospital, Boston Consumptive Hospital, Boston Dispensary, Boston State Hospital (Psychopathic Department), Carney Hospital, Free Home for Consumptives, Dispensary for Women, Massachusetts General Hospital, Massachusetts Charitable Eye and Ear Infirmary, Massachusetts School for Feeble Minded, Massachusetts State Sanatorium for Treatment of Tuberculosis, Mount Sinai Hospital, Robert Brigham Hospital, St. Elizabeth's Hospital, St. Mary's Infant Asylum, Tremont Dispensary, and at various private clinics.

SESSIONS OF THE SCHOOL

The annual course of lectures begins on the last Wednesday in September of each year, and continues thirty-six weeks until the second Wednesday in June. The annual course of lectures for 1914-15 will commence Wednesday, September 30, 1914, at 3 o'clock P.M.

VACATIONS

There are no exercises at the School during three days at Thanksgiving, ten days at Christmas, and the week beginning April 5, 1914, nor upon Columbus Day, Washington's Birthday, Patriots' Day and Memorial Day.

OUTLINE OF THE COURSE

The course of study is a graded one, covering four annual sessions. In general the first two years consist of didactic and laboratory work; the last two years are chiefly clinical. During the latter part of the fourth year a certain latitude is allowed in the choice of elective subjects, but the course is otherwise uniform and the required subjects cover thoroughly the general ground of medicine, surgery, and the important special subjects.

For the first three years the school session is divided into two semesters of seventeen weeks each.

First Year

First Semester

Anatomy.—Lectures, recitations, demonstrations, and dissecting, *Thirty-five hours a week.*

Histology.—Lectures, recitations, demonstrations, and laboratory work. *Twleve hours a week.*

Second Semester

Applied Anatomy.—Lectures and demonstrations. *Two hours a week.*

Physiology.—Lectures, recitations, demonstrations, conferences, and laboratory work. *Twenty hours a week.*

Second Year

First Semester

Pathology.—Lectures, recitations, demonstrations, and laboratory work. *Twenty-five hours a week.*

Bacteriology.—Lectures, recitations, demonstrations, and laboratory work. *Five hours a week.*

Embryology.—Lectures, recitations, and laboratory work. *Three hours a week.*

Second Semester

Biological Chemisty.—Lectures, recitations, demonstrations, and laboratory work. *Seventeen hours a week.*

Materia Medica and Therapeutics.—Lectures, recitations, and laboratory work in Pharmacology. *Twelve hours a week.*

Toxicology.—Lectures, recitations, demonstrations, and laboratory work. *Three hours a week.*

Bandaging and Surgical Technique.—Lectures, demonstrations, and section exercises. *Twenty-four hours in all.*

The following subject is given throughout the school year:

Physical Diagnosis. — Lectures, demonstrations, recitations and section exercises. *Forty-eight hours in all.*

Third Year

The following subjects are given throughout the school year:

Theory and Practice.— Lectures, and recitations. *Three hours a week.*

Surgery.—Lectures and recitations (three hours), and two clinical lectures. *Five hours a week.*

Obstetrics.—Lectures, recitations, and demonstrations. (Attendance upon at least six cases of labor is required.) *Three hours a week.*

Diseases of Children.—One lecture at the school and one clinical lecture. *Two hours a week.*

Medical Diagnosis.—*Clinical lecture. *One hour a week.*

Ophthalmology.—*Twenty-four lectures.*

Laryngology.—*Twenty-four lectures.*

First Semester

Hygiene and Sanitation.— Lectures. *Two hours a week.*

Neurology.—*One *clinical lecture a week.*

Neuropathology.—*Sixteen lectures and eight hours of laboratory work.*

Second Semester

Hematology.—*Sixteen lectures and twenty-four hours of laboratory work.*

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*Clinical lectures are given at the hospitals connected with the School.

Pulmonary Diseases and Climatology.—*One clinical lecture* a week.*

Gynecology.—Lectures and recitations. *Three hours a week.*

Genito-Urinary Diseases.—*Sixteen lectures.*

CLINICS

In addition to the above exercises, the students of the third year attend clinics, in sections, in the following subjects: —

- **Clinical Medicine**;
- **Clinical Surgery**;
- **Obstetrics** (each student is required to take charge of at least six cases of childbirth);
- **Children's Diseases**;
- **Pulmonary Diseases**;
- **Ophthalmology**;
- **Laryngology**

The work in clinics averages *twelve hours a week for the year.*

Each student is required to serve one month as assistant at a clinic in the surgical department of an approved hospital.

Fourth Year

The work of the fourth year is required. It is essentially clinical and largely in sections. The work includes a continuation of the clinical work in the general subjects of medicine and surgery, and a grounding in the essentials of those specialties which have not been studied in the third year.

Required Subjects

Class Exercises

Clinical Medicine (including Pulmonary Diseases).—Lectures and conferences at the School (two hours), and clinical lectures (three hours). *Five hours a week, thirty weeks.*

Clinical Surgery.—Lectures and conferences at the School (two hours), and one clinical lecture and operations (two hours). *Four hours a week, thirty weeks.*

Orthopedic Surgery.—Lectures, recitations, and demonstrations. *Three hours a week, thirty weeks.*

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* Clinical lectures are given at the hospitals connected with the School.

General Medicine.—Lectures and recitations. *Two hours a week, thirty weeks.*

Neurology.—One conference at the School and two clinical lectures each week. *Three hours a week, sixteen weeks.*

Psycho-Pathology.—Lectures. *Two hours a week* (*twelve weeks*).

Children's Diseases.—Lectures and conferences. *One hour a week, thirty weeks.*

Otology.—Clinical lectures. *Two hours a week* (*twelve weeks*).

Rectal Diseases.—Lectures. *One hour a week* (*twelve weeks*).

Operative Obstetrics.—*Eighteen hours.*

Electro-Therapeutics.— Lectures. *One hour a week* (*twelve weeks*).

Clinical Gynecology.—*Clinics (in small sections) (*twenty-five weeks*). Conferences *once a week* (*thirteen weeks*).

Medical Jurisprudence.—Lectures and demonstrations. *One hour a week* (*twenty-five weeks*).

Dermatology.—*Clinical lectures. *Two hours a week* (*eighteen weeks*).

Operative Surgery and Surgical Anatomy.—This course is a sub-division of Clinical Surgery, and consists of lectures, demonstrations, and section work in operations on the cadaver. *Three hours a week* (*twelve weeks*).

Mental Diseases.—Lectures and clinical visits at hospitals for the insane. *Two hours a week* (*eighteen weeks*).

Genito-Urinary Diseases.—*Clinics in sections. (*Twenty-four hours—see below.*)

Clinical Work in Sections

Eighteen hours a week are assigned to clinical work in sections throughout the school year.

This work is given as far as possible in close relation to the instruction in each subject. Clinics are given in the following subjects:

Children's Diseases
Clinical Gynecology
Clinical Medicine
Clinical Surgery
Dermatology
Genito-Urinary Surgery
Laryngology
Neurology
Orthopedics
Otology

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* Clinical lectures are given at the hospitals connected with the School.

Summary of Time

First Year	1100 hours
Second Year	1100 hours
Third Year	1050 hours
Fourth Year	1150 hours
Total	4400 hours

EXAMINATIONS

1. For Entrance

Examinations for admission to the pre-medical year (see page 264) may be taken in June at any of the places announced by the College Entrance Examination Board (for a list and application forms, address the Secretary of the Board, P. O. Sub-Station 84, New York N. Y.); or the examinations for admission may be taken at Tufts College, Mass., in September.

2. Promotion

The regular examinations for promotion and for graduation are held at the end of each course.

3. Fall Examinations

The fall examinations will commence Monday, September 7, 1914, at 10 o'clock A.M., at the Medical School Building, and are given for the following purposes: —

(*a*) For students from other medical schools applying for advanced standing.

(*b*) For removal of conditions (other than entrance).

Students intending to take the fall examinations (other than for entrance) are required to notify the Secretary on or before Saturday, August 29, 1914.

In all examinations (except those for entrance) each student must register by signing his name on the registration blank provided for the purpose. If a student fails to register in this manner he shall receive no credit for that examination.

Subjects of Instruction

First Year Subjects

ANATOMY

The course in anatomy is given throughout the first year. During the first half-year there are five lectures and three recitations weekly with the class. In the month of October, thirty hours additional are devoted to demonstrations in Osteology. There are also special demonstrations by the instructors in the difficult parts of the work. In the dissecting room each student is required to dissect three parts, to the satisfaction of the Demonstrator of Anatomy, before taking the final examination. It is necessary for every student to dissect three parts before graduation. Record of attendance and of the quality of the work done in the dissecting room will be kept, and will largely determine the standing of the student in the class.

During the second half-year there are two exercises each week, one hour for applied surgical anatomy and one hour for applied medical anatomy.

HISTOLOGY

The work in histology covers the first half of the school year, and is both didactic and practical. The practical work in the laboratory is emphasized. Here the student comes into the most intimate relation with the elements of the body, the legitimate objects of his study. He learns to use the microscope and to manipulate sections. Being required to draw what he sees, he forms a mental picture of the objects of study which he never forgets.

The department aims to bring before the student the latest utterance of the best authorities, and to present the subject from the standpoint of the medical student. It must be obvious that histology, dealing as it does with the tissue elements of the body in their normal condition, is vitally important in the study of pathology, when it is understood that it is morbid changes in these elements which constitute pathological conditions. The student's future study of pathology is kept constantly in mind, and the teaching of the department has a direct bearing upon that end. The department is furnished with microscopes, the use of which, on payment of a small fee, will be afforded to such as are unable to furnish instruments of their own.

Written exercises and recitations will form a part of the course. Ninety hours of laboratory work are required.

EMBRYOLOGY

The subject of Embryology is given in the second half of the first year with three weekly exercises. The work will cover the science so far as to fit the student with knowledge sufficient for his studies in obstetrics and such other departments as may have to do with embryonic conditions. It is intended to give the student such practical features of the subject as will prove adequate for his needs as a student of medicine, without entering into the many details that tend to confuse and are not essential outside a regular course in biology.

PHYSIOLOGY

The course in physiology is given throughout the latter half of the first year. It constitutes half of the entire work required of the student during that period. The course consists of four recitations, four lectures, six hours of laboratory work, and one conference for every student, each week, together with the preparation of a technical written paper, and extra demonstrations. At the end of each month there is an important written examination.

In the recitations, familiarity with the subject-matter of an assigned text-book of physiology, and of the syllabus, is required. The lectures set forth the principles of general and descriptive physiology, and suggest some of its relations to the allied sciences, especially anatomy. In the laboratory the student has opportunity to acquire a degree of technical skill in the use of instruments and apparatus, demonstrating for himself meanwhile some of the most important facts of biological function, a specialty being made of an acquaintance with the nature of protoplasm. A strict practical examination may be held at the end of the year in the laboratory. The conferences give each student opportunity to become familiar with the literature on important interesting physiological topics, which are then presented in written reports and freely discussed by the whole class. Record both of the attendance and of the quality of the work done in the laboratory and recitation-room will be kept, and, with the conference, will largely help to determine the standing of the student in the class. In addition, a three-hour written examination covering the entire work of the year is held at the completion of the work, besides the important subsidiary written examinations, monthly, and weekly written tests.

Advanced and research work in physiology will be provided for competent students, by special arrangement with the head of the department. Work in this department is also offered to candidates for the degree of Master of Arts. The constant aim is to adapt the work of each student both to his needs and to his capabilities.

Second Year Subjects

PATHOLOGY

The work in pathology and bacteriology will occupy the attention of the students during the first half of the second year. The instruction in pathology will consist of lectures, recitations, demonstrations, and practical laboratory work. It will be the aim to develop in the student a thorough knowledge of the causes, course, and results of pathological processes. Daily lectures (five times a week) will be supplemented by daily recitations, based upon a syllabus covering the subjects of general pathology and special pathology.

Demonstrations of gross pathological specimens, obtained from operations and autopsies at the Boston City Hospital, the Massachusetts General Hospital, and other institutions, will be held frequently, as material is obtained. The supply of fresh material is very large, and it is usually possible to illustrate all of the common disease processes and many of the rare lesions, during the time when the class is at work. Instruction in autopsy technique will be given in the amphitheatre of the School.

The work in pathological histology will include a three-hour exercise daily, five times a week. Students will mount and make drawings of sections obtained from human and experimental lesions, comprehending all the important subjects of general and special pathology. Considerable attention will be paid to surgical pathology. Preserved gross specimens illustrating the lesions studied will be demonstrated in connection with the laboratory exercises.

Written recitations will be held, without notice, at irregular intervals throughout the term. The standard attained by the student in these exercises will influence his final mark in the subject. Final examinations will be held at the end of the year, three hours of written and two hours of practical work. A report on gross specimens may be included.

Microscopes will be loaned to students for a small fee.

BACTERIOLOGY

Bacteriology is taught as a companion study with pathology. As infectious processes are taken up, the bacterial causes are studied in connection with the pathology of the diseases which they produce, in such a way that a comprehensive view of the cause and effect may be obtained. Attention is paid to the technical details of laboratory work. The methods of bacterial action, the elaboration of toxines, the subject of immunity, and the important bearings of asepsis, antisepsis, and disinfection are especially emphasized. Particular attention is also paid to all practical bacteriological tests used in medicine.

The bacteriological laboratory presents adequate facilities for the intelligent demonstration of this subject. In addition to the usual laboratory work, facilities are afforded students for individual work. In connection with the demonstration of gross pathological specimens, a study of bacteria present is made, both by smear and culture. The recitations in this subject will include both oral and written exercises, and practical examinations will be held throughout the year.

The final examination will consist of two hours of written and one hour of practical work. The practical examination will consist of the examination of an unknown specimen, requiring the application of a bacteriological test of clinical value.

PHARMACOLOGY

Instruction in pharmacology consists of lectures, recitations, and laboratory exercises, twelve hours a week throughout the second half-year. Especial attention is given to the physiological action of drugs in its relation to their therapeutical application, and to the relation always existing between therapeutics and physiological and pathological laboratory work. The laboratory course is designed to familiarize the student with all medicinal preparations and processes, and consists of exercises in which the class in sections is led to this result practically.

Prescription writing and the metric system will receive careful attention. Such of the recent additions to *materia medica* as are deemed worthy will be properly considered.

BIOLOGICAL CHEMISTRY

The course begins with study of the carbohydrates, proteins and fats. These subjects are followed by consideration of the Chemical Physiology and Chemical Pathology of the human body.

Special attention is given to the chemistry and microscopy of urine, feces, blood and gastric contents. These subjects occupy a large part of the laboratory exercises.

Diagnosis of renal, gastric and intestinal diseases from chemical and microscopic findings is fully considered in both lectures and recitations.

OPTIONAL COURSE

Research Work in Biological Chemistry. Students must obligate themselves to spend at least a half-year, and write a thesis upon the result of their investigation. This course is similar to that given in the Graduate School for the degree of Master of Arts.

TOXICOLOGY

The lecture and laboratory course in Toxicology is systematic and comprehensive. Students are required to determine the identity of various organic and inorganic poisons in stomach contents, tissues and in food.

In addition to the regular recitations, occasional conferences are held, at which cases of poisoning are discussed.

PHYSICAL DIAGNOSIS

This is an elementary course in the study of physical signs in health and disease, and is the foundation for the study of Clinical Medicine Special attention is given, in the explanation of physical signs, to the principles of physics, and to the facts of anatomy and physiology upon which they are based. The course follows the instruction in Medical Anatomy, part of the course in Applied Anatomy of the first year, and leads to the course in Medical Diagnosis in the third year. The course consists of one lecture a week throughout the second year (thirty-two lectures), and fifteen exercises in sections, chiefly on elementary percussion and auscultation.

BANDAGING AND SURGICAL TECHNIQUE

Bandaging and surgical technique is given to students of the second year, and consists of practical work in applying bandages, dressings, splints, etc. The course is preceded by lectures and demonstrations by the Demonstrator of Bandaging and Apparatus. Upon the conclusion of the lectures, each student receives individual instruction in the subject, and must show himself skilled in this work before completing the course.

During the second semester a series of lectures will be given upon surgical technique.

The course is a part of the work in Surgery.

Third Year Subjects

THEORY AND PRACTICE OF MEDICINE

The work prescribed in the department of general medicine has been carefully planned. As the studies of the second year are intended to prepare the student for the study of the theory and practice of medicine, so this course is intended to prepare for the clinical courses of the fourth year. To this end a systematic series of lectures is offered, including such general diseases as are not considered in the special courses. Two hours a week are devoted to these lectures. They comprise a detailed description of each of the diseases under consideration. The diseases are discussed upon the uniform plan of a description of the affection, its synonyms, history, cause, pathological changes, symptoms, complications, diagnosis, prognosis, prevention and treatment. Supplementary to these lectures, a weekly quiz class is held. By such thorough and systematic study of the diseases he is to meet in the clinical work of the fourth year, the student is prepared to appreciate in the fullest degree the varying phenomena of daily practice.

SURGERY

The course in surgery of the third year consists of lectures covering the principles of general surgery, attendance at clinics, recitations, and written quizzes. The instruction in this year prepares the student for the courses of the fourth year in clinical, abdominal, rectal, genito-urinary, gynecological, and orthopedic surgery.

The class attends the lecture in clinical surgery at the Boston Dispensary, one morning each week from October 1 to April 1, where the time is principally devoted to demonstrating from the case the various conditions which a practitioner meets in general practice. So far as possible, cases are grouped, and one morning of each week is devoted to the consideration of a single subject, with many cases illustrating the condition under discussion.

The class, divided into small sections, attends the regular surgical clinics of the School each week throughout the school year at the Boston City Hospital, the Boston Dispensary, the Carney Hospital, and St. Elizabeth's Hospital.

At some time after the course in bandaging and surgical technique, but before graduation, each student must present a certificate stating that he has served satisfactorily as surgical dresser for at least one month in some institution approved by the Faculty. All students who have not already taken the course in bandaging must make arrangements with the demonstrator to complete this course before January 1 of the third year.

LARYNGOLOGY

Instruction in the diseases of the nose and throat is both didactic and clinical. Third-year students are given during the first semester a systematic course of lectures illustrated with colored diagrams, models, pathological specimens, and the exhibition of instruments. The projection apparatus is used at the close of each lecture.

Clinical laryngoscopy and rhinoscopy are required throughout the fourth year. The students in small sections visit the laryngological clinics at the Boston Dispensary, the Boston City Hospital, and the Carney Hospital. By practical examination the technique instrumentation is taught as well as general diagnosis and treatment. The student is made familiar with ordinary diseases of the nose and throat and sees the more important operations.

NEUROLOGY

The Department of Neurology is under the direction of Dr. Thomas, and the courses consist entirely of required work.

The work of the third year consists of:

(1) Didactic lectures and recitations, once a week during the first half year by Dr. Stearns.

(2) Clinical lectures by Dr. Thomas once a week during the first half year, demonstrating the anatomy and physiology of the nervous system.

(3) Lectures on the anatomy, physiology, and pathology of the nervous system are given at the Medical School once a week during the first half-year by Dr. Tower, supplemented with instruction by sections in the laboratory in the microscopical examination of the normal and pathological nervous system; and demonstrations of gross pathological specimens.

OPHTHALMOLOGY

The course in ophthalmology will be of the most practical character possible, being designed to give the general practitioner such knowledge of the subject as is most essential to his practice. The lectures will be given once a week, the first half of the school year. For clinical work the class will be divided into small sections, preparatory to instruction at the Massachusetts Charitable Eye and Ear Infirmary.

OBSTETRICS

The instruction in obstetrics consists of lectures, recitations, and clinical teaching. Each student is given the opportunity to serve as externe in the Obstetric Out Patient department, where he personally delivers the six cases required for the degree. He is required to care for these cases during their convalescence and to write a detailed report of each case. A large majority of each class deliver more than six cases and witness the common obstetric operations.

PULMONARY DISEASES AND CLIMATOLOGY

A chair of pulmonary diseases and climatology was established some years ago, and Dr. Edward O. Otis, Physician to the Free Home for Consumptives, and the tuberculosis department of the Boston Dispensary, formerly president of the American Climatological Association, was elected head of this department. Medical climatology will receive special attention in relation to the climatic treatment of tuberculosis. The methods of sanatorium treatment will be discussed, and one or more sanatoriums visited during the year. "The tuberculosis class," "the day camp," and other modern methods of treating tuberculosis are also given attention.

A limited number of students of the fourth year who desire to assist at the tuberculosis clinic of the Boston Dispensary will have opportunity to do so, and should apply to Dr. Otis. In this department special attention is devoted to pulmonary tuberculosis, concerning which instruction is given, both by didactic and clinical lectures, to the students of the third and fourth years. Special clinical instruction, with opportunities for the physical examinations of patients, will be given to the students of the third and fourth classes, in small sections, at the clinic for pulmonary diseases in connection with the Boston Dispensary, the out-patient department of the Boston Consumptive Hospital, and the Mt. Sinai Hospital. The detection, treatment, and prevention of pulmonary tuberculosis will be thoroughly studied in this class.

GENITO-URINARY DISEASES

The required course in Genito-Urinary Diseases will commence in the second half of the third year, when the didactic lectures in this subject will be given. Clinical instruction will be given in sections during the entire fourth year.

GYNECOLOGY

Instruction in gynecology is given both by lectures and clinical teaching. Lectures are given to the third-year students twice a week during the second term. Once a week a quiz is held on the lectures.

CHILDREN'S DISEASES

The work of the third year consists of lectures on chosen subjects and clinical lectures with ward patients, covering the common diseases of childhood two hours a week throughout the year. Clinical instruction is given in sections at the Out-Patient Department of the Boston Dispensary and Mt. Sinai clinic. Each section works for one month and is taught by required practical work with patients in diagnosis and treatment. The clinical laboratory work helpful in diagnosis is done at the clinic in connection with the physical examination of patients. During the year the class will be taken to a model farm where all the practical points in the proper care of milk for infants will be demonstrated.

MEDICAL DIAGNOSIS

The instruction in Clinical Medicine during the third year is given under the head of Medical Diagnosis. The course continues throughout the third year. One clinical lecture each week is given at the Boston City Hospital, illustrating the subject. In addition the class, in sections, attends ward visits and medical clinics. An important part of this clinical work is given under the supervision of the Department of Pulmonary Diseases, and in district visits under the supervision of physicians of the Boston Dispensary. The work in this course is closely correlated with the course in Theory and Practice.

HYGIENE AND SANITATION

Hygiene and sanitation are taught during the third year.

The principal subjects of the course are air, water (public and private), and food supplies.

The transmissible diseases, and their epidemiology, industrial hygiene, and the inspection of work-shops and factories, house construction, heating, ventilating, and plumbing, care of family wastes, and the disposal of sewage.

Railroad sanitation, military and naval hygiene, quarantine, disinfection and fumigation. National and State laws relative to health officers, and the protection of the public health.

The inspection of schools.

Burial of the dead, and vital statistics.

HEMATOLOGY

The course in hematology consists of sixteen lectures and twelve two-hour laboratory exercises, — forty hours in all for each student during the second semester of the third year,—with occasional clinical lectures at the Boston City Hospital. It is given as a sub-department of Clinical Medicine, and it is the aim to adapt it to the needs of the future practitioner. The lectures deal with diseases of the blood from a clinical as well as from a laboratory standpoint. The first laboratory exercises consist of preliminary instruction in the technique of blood examination, followed by practical work in blood pathology. A permanent collection of some three thousand microscope slides and a number of excellent wall-charts are also available.

Fourth Year Subjects

CLINICAL MEDICINE

The aim of the work in Clinical Medicine is to give the student a practical acquaintance with disease. The instruction in this department begins with Medical Anatomy (part of the course in Applied Anatomy), in the second semester of the first year. Then follow the course in Physical Diagnosis in the second year and the course in Medical Diagnosis in the third year. The fourth-year course in Clinical Medicine is a continuation and further development of this work.

The instruction consists of two clinical lectures at the Boston City Hospital, one clinical lecture (Pulmonary Diseases) at the Boston Dispensary, and two hours at the School. One of these latter hours is given to conferences on cases which the students have studied, and the other is given partly to instruction in practical therapeutics and dietetics, and partly to exercises in conjunction with the Department of Pathology on clinical pathology, — the clinical and pathological study of actual cases.

In addition, abundant opportunities for clinical study are offered, in ward visits and other medical clinics. This instruction is given chiefly at the Boston City Hospital, the Boston Dispensary, and the Free Home for Consumptives. The work in Pulmonary Diseases in the fourth year is regarded as part of the course in Clinical Medicine.

The marks throughout the various courses of the Department of Clinical Medicine are based on practical work and the report of cases, as well as on written examinations.

CLINICAL SURGERY

The Department of Clinical Surgery has been reorganized. Dr. William Merritt Conant, Visiting Surgeon at the Massachusetts General Hospital, has been appointed Professor of Clinical Surgery; and Dr. William Allen Brooks, Jr., Chief of the Surgical Staff at St. Elizabeth's Hospital, has been appointed Assistant Professor of Clinical Surgery. The efficiency of the department has been greatly augmented by these appointments, by which a wide range of major clinical and operative surgery is added to the teaching facilities in general surgery. The work of the fourth year consists of lectures, conferences, attendance at clinics and operations. The class in small sections attends clinics at the Massachusetts General Hospital, Boston City Hospital, St. Elizabeth's Hospital, and the Boston Dispensary. At these clinics students have opportunity for examining and studying cases; become practically familiar with diagnosis and treatment, and see a large number of surgical operations, both major and minor. Students in this class also have opportunities for administering ether and assisting at operations.

OPERATIVE SURGERY AND SURGICAL ANATOMY

The work in operative surgery has been enlarged by the addition of a course in surgical anatomy, given by the department of anatomy in conjunction with the department of clinical surgery. This course, which includes three exercises a week for five weeks, consists of demonstrations of surgical landmarks upon the living model, the skeleton, and the cadaver, and a review of anatomy in general. Especial emphasis is laid upon that part of anatomy which is important in operative surgery.

Regional anatomy is demonstrated, and at the conclusion of the review given by the department of anatomy the important surgical operations of the region under discussion are demonstrated by members of the surgical staff. Thus surgery of the neck is first treated from the standpoint of surgical landmarks, pointed out upon the living model, the skeleton, and the cadaver. The surgical anatomy of the neck is then demonstrated on the cadaver, and at the conclusion of these exercises by the Department of Anatomy, the important surgical operations of the neck are demonstrated by members of the Department of Surgery.

The same course is pursued with all parts of the body, and at the conclusion of the anatomical teaching concerning any region, the special operations of that region are demonstrated by members of the surgical staff.

At the conclusion of the course the class is divided into small sections, and each section performs the various operations upon the cadaver in the dissecting room. Each section is supervised by an instructor.

The course in operative surgery and surgical anatomy as above outlined is a part of the required work in clinical surgery.

NEUROLOGY

The Neurology for the fourth year class consists of (1) clinical exercises in the Out-Patient Department of the Boston City Hospital by Dr. Fairbanks, to sections, at which instruction is given in methods of examination of the patient, and in topographical diagnosis of diseases of the nervous system; (2) exercises in the wards of the Boston City Hospital to sections by Dr. Thomas, in which each student is given opportunity to examine and study the patient for himself under the direction of the instructor, so as to become familiar with methods of examination, followed by discussions upon the differential diagnosis, pathology and treatment of the disease; and (3) clinical conferences, at which the student makes a written report of a case which he has himself seen and diagnosed, and the report is discussed by the class and the instructors. In connection with these clinical conferences each student is requred to examine and report on an assigned case of nervous disease. The mark on the fourth year work is based in part upon this report of a case, and in part on the work done in the sections, and in part upon an examination which is largely clinical. Students whose attendance upon the section work is unsatisfactory are excluded from the examination. The clinical exercises are held at the Boston City Hospital during the first half year, and each section attends daily for one month, and each exercise lasts two hours.

MENTAL DISEASES

Instruction in mental diseases will be afforded by a course comprising didactic and clinical lectures, to be given weekly from January to the middle of May. Ten or more clinics will be held at the Boston Psychopathic Hospital, where a large number of patients are received annually. Two clinics will be given also at the Massachusetts School for Feeble-Minded, at Waverley. It will be the aim of this course to allow the students to become familiar with the prevalent forms of mental trouble, the early symptoms of insanity, and with the methods of commitment. Especial attention will be given to mental defects in children.

CHILDREN'S DISEASES

The fourth year work in Children's Diseases consists of one exercise a week throughout the year in case teaching, infant feeding and the feeding of delicate children. For practical work the class is divided into sections. Each section will act for one month as clinical assistants in the Out-Patient Department of the Boston Dispensary. Opportunity is here given each student to make physical examinations and to follow up special cases. During this time three ward visits will be made weekly and one morning each week practical instruction will be given in milk analysis and the examination of stools. The work includes special instruction in the food laboratory. Contagious diseases are presented to the class in sections at the South Department of the Boston City Hospital. When possible, at these visits to the contagious wards of the hospital, the technique of intubation will be shown.

OBSTETRICS

All the important obstetric operations and operative manœuvres are demonstrated to the class in small sections, and each student then performs these operations on the manikin under the guidance of the instructor. This individual teaching constitutes a highly valuable and practical experience.

MEDICAL JURISPRUDENCE

In most institutions instruction in legal medicine is limited to those subjects which prepare the graduate for the work of the medical examiner or coroner, in spite of the fact that only a small number of practitioners ever have opportunity to exercise these functions.

The course which will be offered to the fourth-year class is intended to be broader in scope and it will include:

Instruction of the rights and duties of the physician in court.

A study of the legal relations of the physician to the public, to the profession, and to his patients.

Instruction in the duties of the medical examiner, illustrated, by practical demonstration of medico-legal cases.

ORTHOPEDIC SURGERY

The course in orthopedic surgery consists of didactic and clinical lectures extending throughout the year, and of clinics for small sections where the student is familiarized by actual work with the techniqne of the various mechanical and therapeutic measures employed in the practice of Orthopedic Surgery. The clinical work will be carried on at the Massachusetts General Hospital, the Boston Dispensary, and the Robert Brigham Hospital.

OTOLOGY

Instruction in otology consists of lectures on the anatomy, physiology, and pathology of the ear, at the Massachusetts Charitable Eye and Ear Infirmary. These lectures are illustrated by Politzer's charts of the human ear, models, anatomical specimens of the temporal bone, bone-corrosion preparations, and microscopical sections of the organ of hearing.

Clinical and practical instruction in otology is given to small sections of the class at the close of each lecture. The students witness the examination and treatment of patients, are invited in class sections to be present at the major operations upon the ear, and to accompany the aural surgeon in his daily rounds through the wards.

DISEASES OF THE RECTUM

The course in diseases of the rectum will consist of weekly lectures during the first half-year at the School, and clinical instruction every morning at the rectal department of the Boston Dispensary. Each student will have ample opportunity to examine patients, and in suitable cases to apply treatment. Especial attention will be paid to so-called "office treatment" of this class of diseases.

DERMATOLOGY

The instruction in dermatology will consist of weekly lectures to the fourth-year students from January to April. Also, from October to May, there will be three weekly clinics at the Boston City Hospital, where cases of skin diseases will be shown to the class, with an opportunity for each student to examine the cases personally.

GENITO-URINARY SURGERY

Clinical instruction in genito-urinary surgery is given at the genito-urinary department of the Boston Dispensary. All the students of the fourth year are required to attend the clinic in sections permitting individual instruction, and are taught the chief points of modern genito-urinary technique. As the number of patients attending this clinic is very large, each student has an opportunity to see many cases of genito-urinary surgery and to become familiar with their diagnosis and treatment.

ELECTRO-THERAPEUTICS

The course in electro-therapeutics given to the fourth-year students will consist of twelve lectures, with occasional quizzes. It will include a brief review of the principles of electro-physics, the nature, methods of production, and physiological action of the various forms of electrical energy, together with a brief discussion of therapeutic uses and limitations.

CLINICAL GYNAECOLOGY

The first essential being the ability to make an exact diagnosis, the students of the fourth-year class, in sections of two students only, are given abundant opportunity to make physical examinations under proper supervision. The daily clinics (morning and afternoon) of The Dispensary for Women, of the Boston Dispensary, the Tremont Dispensary, Carney Hospital, St. Elizabeth's Hospital, and Mount Sinai Hospital provide a course in methods of diagnosis and treatment superior to any other in New England. Adequate provision is also made for students to witness operations in plastic and major pelvic surgery.

CLINICAL TUBERCULOSIS

A special elective course in clinical tuberculosis is given to the fourth-year class by Professor Otis during the months of January, February, and March. It will pay special attention to the early stages of the disease, and will deal generally with the diagnosis, prognosis, treatment, and prophylaxis of pulmonary tuberculosis. There will be at least twenty-five clinical exercises, and a required essay, or examination.

TEXT-BOOKS

[For the session 1912-13]

The first book mentioned is preferred as a text-book, the others being recommended as collateral reading.

Anatomy. — Piersol, Gray, Morris, Cunningham, Eisendrath, Sabotta McMurrich, Spatheholz, Cunningham's Manual of Dissection.

Bacteriology.—Syllabus, Park and Williams, Hiss and Zinsser, Jordan, Muir and Richie, McFarland, Abott, Lehmann and Neumann, Sternberg.

Biological Chemistry.— Hammarstein's Physiological Chemistry, Well's Chemical Pathology, Ogden's Clinical Examination of the Urine, Purdy's Practical Urinalysis and Urinary Diagnosis, Simon's Physiological Chemistry, Wood's Chemical and Microscopical Diagnosis, Holland's Medical Chemistry and Toxicology.

Children's Diseases.—Holt's Diseases of Infancy and Childhood, Kerley's Treatment of Children's Diseases, Sach's The Nervous Diseases of Children, Morse's Case Histories in Pediatrics.

Clinical Gynaecology.—Dudley, Garrigues.

Clinical Medicine.—Osler's Practice of Medicine, Wood and Fitz's Practice, Ander's Practice of Medicine, Forscheimer's Prophylaxis and Treatment.

Clinical and Operative Surgery. — Brewer, International Text-book, American Text-book, Wharton and Curtis, Roberts, Stimson on Fractures and Dislocations, Scudder on Treatment of Fractures, Binney's Operative Surgery, Treves's Surgical Anatomy, Crandon's Surgical After-Treatment.

Dermatology.—Hyde and Montgomery's Diseases of the Skin, Duhring; Stelwagon, Crocker, Kaposi, Besmer.

Diseases of the Rectum.—Kelsey, last edition; Tuttle, Gant, second edition.

Gastro-Intestinal Diseases.—Riegel, Boas, Kemp (of the Stomach), Boas, Ernhorn (of the Intestines).

Genito-Urinary Diseases.—Keyes, Morton, Taylor, Greene-Brooks.

Gynaecology.—Dudley, Kelly, Reed.

Hematology.—Cabot's Clinical Examination of the Blood.

Histology.—Syllabus, Böhm and Davidoff, Stohr, Ferguson, Bailey, Schäfer's Essentials.

Hygiene.—Bergey, Principles of Hygiene; Egbert's Hygiene and Sanitation.

Laryngology.—Coakley, Knight, Kyle, Shurley, Ballenger.

Materia Medica and Therapeutics.—Hare, Sollman, Cushing-Thornton's Dose Book and Manual of Prescription Writing.

Medical Diagnosis.—Musser's Medical Diagnosis.

Medical Dictionary.—Gould, Dunglison, Dorland.

Mental Diseases.—Brower and Bannister's Practical Manual of Insanity Diefendorf's Clinical Psychiatry, Berkely's Mental Diseases, Wood's, Reference Handbook, article on Insanity, Clouston's Clinical Lectures on Mental Diseases, Tuke's Dictionary of Psychological Medicine, E. Regis's Practical Manual of Mental Medicine, Wm. A. White's Outlines of Psychiatry.

Neurology.—Oppenheim, Church and Peterson.

Obstetrics.—J. W. Williams' Text Book of Obstetrics (third edition).

Ophthalmology.—Fuch, Swanzey, May.

Orthopedics.—Bradford and Lovett, Whitman's Orthopedic Surgery (fourth edition), Goldthwait, Painter and Osgood.

Otology.—Bacon's Manual of Otology.

Pathology.—Syllabus, Stengel, Ziegler, Coplin, Mallory and Wright's Technique, Durck's Pathological Histology, Cohnheim, Green, American Text Book.

Physical Diagnosis.— DaCosta's Physical Diagnosis, Ander's Physical Diagnosis.

Physiology.—Syllabus, Dearborn's Text-Book of Physiology, Howell, Landois, Verworn, Schäfer, Morat, Hutchinson, McFarland's Biology.

Practice of Medicine.—Osler, Tyson, Forscheimer's Prophylaxis and Treatment, Anders's Practice of Medicine, Thompson, Strümpell, Eichhorn.

Pulmonary Diseases.—Babcock's Diseases of the Lungs, Otis' The Great White Plague, Otis' Treatment of Tuberculosis in Musser and Kelley's Treatment, Kleb's Tuberculosis, Bonney's Tuberculosis and Its Complications.

Surgery.—Da Costa, International Text-book, American Text-book, Stimson on Fractures and Dislocations.

Toxicology.—Taylor's Medical Jurisprudence, Peterson and Haine's Legal Medicine and Toxicology, Brundage's Toxicology.

Requirements

ENTRANCE REQUIREMENTS

Beginning with the year 1914–15 important changes in the requirements for admission to the Medical School will be made. In accordance with the rules made by the Association of American Medical Colleges, of which this School is a member, the following requirements will be enforced.

Admission to the first-year class may be obtained in two ways:

1. By presenting a bachelor's degree from an accredited* college or university.

2. By the satisfactory completion of a pre-medical course of at least one year's work in an accredited college or university, including courses in Physics, Chemistry, Biology, and German or French.

Candidates for admission to this One Year Pre-Medical Course must pass examinations or present a diploma and a transcript of record from an approved school showing adequate preparation in certain subjects falling in two groups, known respectively as the Required and the Elective Group. A unit represents a year's study in any subject in the secondary school, representing approximately a quarter of a full year's work.

Required Group, 7 Units

English A, 2 (Reading and Practice)
Elementary Language, 2
Elementary Algebra, 1
Plane Geometry, 1
The History and Government of the United States, 1

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*The term "accredited" as applied to high schools, academies, colleges and universities means institutions of that type that have been investigated and are accredited by the State University of their respective states, by the North Central Association of Colleges and Secondary Schools, the Association of Colleges and Preparatory Schools of the Southern States, the Association of Colleges and Preparatory Schools of the Middle States and Maryland, the New England College Entrance Certificate Board, the Association of American Universities, and the Association of State Universities.

Candidates for admission must present all the subjects of the Required Group, and 7 units chosen from the subjects of the following Elective Group. No subject offered in the Required Group can be counted in the Elective Group.

The Elective Group. 7 Units

English B, 1
Greek, 2 or 3
Latin, 2 or 3
French, 2 or 3
German, 2 or 3
Chemistry, 1
Physics, 1
Botany, 1
Zoology, 1
Geology or Geography, 1
Mechanical Drawing, 1
Freehand Drawing, ½
Shop Work, ½ to 2
Musical Appreciation, ½
Music (Harmony), ½
Algebra (completed), ½
Solid Geometry, ½
Trigonometry, ½
English History, 1
Ancient History, 1

Detailed information concerning the amount and character of the work required in preparation may be found on pages 43 and 65.

The school of Liberal Arts at Tufts College is prepared to give instruction in a course covering the requirements as outlined by the American Medical Association, and the requirements for admission will be as indicated above.

The rules, regulations, and expenses governing students in this course are the same as those for students in the School of Liberal Arts. For a detailed statement see "General Information."

PROMOTION

To Second-Year Class

Students who have passed a majority of the first-year examinations are admitted to the second-year class.

To Third-Year Class

Students of the second-year class who have passed all the first-year examinations, and a majority of the second-year examinations, are admitted to the third-year class.

To Fourth-Year Class

Students who have passed all the studies of the first and the second year, and a majority of the studies of the third year, are admitted to the fourth-year class. No other students are admitted to this class, except by special vote of the Faculty.

GRADUATION

For the Degree of M.D.

Candidates for the degree of Doctor of Medicine must have fulfilled the following requirements: —

1. They must furnish certificates that they are twenty-one years of age.
2. The Faculty must be satisfied of their good moral character.
3. They must have attended four full courses of medical study at some accredited medical college, the last of which shall have been at this School as members of the fourth-year class, and no two courses in the same twelve months.
4. They must have passed all the required examinations, and have performed the required amount of laboratory and clinical work.
5. They must have satisfactorily dissected one-half of the body, under the direction of a demonstrator of anatomy.
6. They must have paid all fees.

CHANGE OF REQUIREMENTS

The Faculty reserve the right to change all requirements without further notice.

HONORS

Students who have attended four full courses of lectures at this School, and have obtained an average of ninety per cent. in their examinations, shall be eligible to "*summa cum laude.*"

Students who have obtained an average of eighty per cent. shall be eligible to "*cum laude*," in connection with the degree received.

STANDING AND CERTIFICATES

At the end of each session a certificate of his standing for the year is sent by mail to each student. No marks will be sent or credit given to any student who is in arrears with the Bursar.

FEES AND EXPENSES

A matriculation fee of *five dollars* is payable each year.

A charge of *one hundred and fifty dollars* for tuition is payable in advance. If not paid before November 1, there will be an additional charge of *five dollars.*

If desired, the tuition may be paid in instalments, in which case an additional charge of five dollars is made, and the fees are then paid as follows: —

First payment: — Five dollars for matriculation fee and seventy-five dollars on account of the tuition, a total of *eighty dollars*, payable at the beginning of the first semester.

Second payment: — Seventy-five dollars, the balance of the tuition, and five dollars, the additional charge, a total of *eighty dollars*, payable at the beginning of the second semester, or before February 1.

There is no charge for laboratory supplies. Anatomical material will be supplied at cost.

No student will be admitted to the exercises of the first half-year who has not paid his matriculation fee and at least one half the tuition, and no student will be admitted to the exercises of the second half-year who has not paid his fees in full.

Students leaving the school have no claim for tuition paid.

Students who have failed twice in a subject are required to pay a fee of five dollars for each subsequent examination in that subject.

POST-GRADUATE FEES

Post-graduate fee for graduates of other schools	$150.00
Single course	50.00
Post-graduate fee for graduates of this school	60.00
Single course	30.00
Anatomical material	at cost

The Bursar of the College will be at the School, Monday, Wednesday, and Friday, 2.30 to 5.00 P.M., from October 1 to June 1.

There are no scholarships connected with the School.

The expenses of living in Boston need not exceed those in small cities and villages. Good board, including room, heat, and light, can be obtained in the vicinity of the school at from $5.50 to $7 a week. Students will not be allowed to occupy rooms disapproved by the Faculty.

LIBRARIES

The students of this school have free access to the Medical School Library, to the Library of Tufts College, to the Boston Public Library, and to the Boston Medical Library.

The library at the Medical School is open daily from 9.00 a. m. to 5 p. m., except Sundays and holidays. This library is intended to provide *text books for reference*, and the latest editions of all text books used in the school are furnished. These cannot be taken from the Reading Room. In addition, the library contains a large number of reference books in general medicine and general surgery, and in all special branches of each. These works are loaned to the student free of charge, and can be taken out. Complete files of various medical journals provide a valuable addition to the school library.

The Boston Medical Library, which is situated near the School, has one of the largest and most complete collections of medical works in existence. It contains not only bound volumes of every important book in medical literature, but also a very extensive collection of monographs and pamphlets on special subjects. All the leading medical journals are on file for inspection. The Boston Medical Library extends its privileges, under certain conditions, free of charge to students of this School. Its rooms are open daily from Oct. 1 to May 31, from 9.30 a. m. to 10.00 p. m., except Sundays and holidays. The hours on Saturday are from 9.30 a. m. to 6 p. m.

APPLICATIONS

Students who intend to enter the School for the first time must obtain from the Secretary an application blank, which they are required to fill out and return to him. Application blanks will be mailed upon request.

REGISTRATION

Registration is required of all students, each year. Registration for the session 1914–15 will commence Wednesday September 16, 1914, and close Tuesday, October 6, 1914. Registration is conducted at the school building only.

Summer Courses

The following subjects are offered during the summer months: —

PHYSIOLOGY

A course in Physiology will be given during the months of June and July by, or under the direction of, the Professor of Physiology. For particulars of the course application should be made to Dr. Dearborn.

HISTOLOGY

A summer course will be given under the direction of the Professor of Histology. Particulars as to the scope of this work. and the fee, may be learned upon application to Dr. Bates.

CHEMICAL BIOLOGY

A summer class in chemical biology is conducted by Dr. Thorpe. This is a laboratory course, and is given in the laboratory of the department of Chemical Biology. For further particulars, apply to Dr. Thorpe.

THE DENTAL SCHOOL

Faculty of the Dental School *

WILLIAM LESLIE HOOPER, A.M., M.D., ACTING PRESIDENT
Tufts College

CHARLES FAIRBANK PAINTER, A.B., M.D. . 372 Marlborough St.
Professor of Othopedic Surgery, and Dean

HAROLD WILLIAMS, A.B., M.D., LL.D. . . . . 528 Beacon St.
Professor of the Theory and Practice of Medicine and Dean of the Medical and Dental Schools, Emeritus

FREDERIC MELANCTHON BRIGGS, A.B., M.D. . . 31 Mass. Ave.
SECRETARY, *and Professor of Surgery*

CHARLES ALFRED PITKIN, A.M., PH.D. . . . . South Braintree
Professor of Chemistry

GEORGE COOK AINSWORTH, D.D.S., D.M.D. . 220 Clarendon St
Associate Professor of Clinical Dentistry

FRANK GEORGE WHEATLEY, A.M., M.D. . . . . North Abington
Professor of Materia Medica and Therapeutics

BYRON HOWARD STROUT, D.D.S . . . . Taunton
Professor of Operative Technics

WILLIAM ELISHA CHENERY, A.B., M.D. . . 222 Huntington Ave.
Professor of Diseases of the Nose and Throat and Instructor in Oral Syphilis

WILLIAM RICE, D.M.D. . . . . 16 Arlington St.
Professor of Operative Dentistry

GEORGE ANDREW BATES, M.SC., D.M.D. . . . . . . Auburndale
Professor of Histology

WILLIAM PRESTON HOUSTON, D.M.D. . . . . 416 Boylston St.
Assistant Professor of Clinical Dentistry

EUGENE THAYER, A.M., M.D. . . . 2683 Washington St., Roxbury
Demonstrator of Anatomy

GEORGE VAN NESS DEARBORN, A.M., M.D., PH.D. 6 Mason St.,
Professor of Physiology Cambridge

FRANK ALEXANDER DELABARRE, A.B., D.D.S., M.D.,
Professor of Orthodontia 164 Newbury St.

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* When only street and number are given in the address, the street is in Boston. With the exception of the President, the Dean, and the Secretary, the names are arranged in the order of academic seniority.

WALTER EMERSON FARRIS, D.D.S. . . . . . . 711 Boylston St.
Assistant Professor of Prosthetic Dentistry

TIMOTHY LEARY, A.M., M.D. . . . 44 Burroughs St., Jamaica Plain
Professor of Pathology, Bacteriology and Medical Jurisprudence

ERVIN ARTHUR JOHNSON, D.M.D. . . . . 2 Commonwealth Ave.
Professor of Clinical Dentistry

HARRY HOMER GERMAIN, M.D. . . . . . 416 Marlborough St.
Assistant Professor of Anatomy

JAMES KELTIE, D.D.S. . . . . 419 Boylston St.
Assistant Professor of Crown and Bridge Work

OLGA CUSHING-LEARY, M.D. . . 17 Grovenor Rd., Jamaica Plain
Assistant Professor of Pathology and Bacteriology

CURTIS WILLIAM FARRINGTON, D.M.D. . 246 Huntington Ave.
Assistant Professor of Clinical Dentistry

FRANK EUGENE HASKINS, Ph.G., M.D. . . 134 Huntington Ave.
Assistant Professor of Materia Medica and Therapeutics

OTHER INSTRUCTORS

CAROLUS AARON FOX, D.D.S. . . . . 419 Boylston St.
Demonstrator of Clinical Dentistry

IVAN ALEXIS TEOFIL CENTERVALL, B.S., D.M.D. . 2 Park Sq.
Instructor in Clinical Dentistry

CHARLES HARVEY DAVIS, D.D.S. . 24 High St., Pawtucket, R. I.
Instructor in Clinical Dentistry

WILLIAM MARTIN FLYNN, D.M.D. . . 474A Broadway, S. Boston
Instructor in Clinical Dentistry

OSCAR EMERY WASGATT, D.D.S. . . . . 419 Boylston St.
Demonstrator of Clinical Dentistry

GUY MONROE WINSLOW, A.B., Ph.D. . . . . 145 Woodland Rd.,
Instructor in Histology Auburndale

ROBERT EATON ANDREWS, A.B., M.D. . . . . 1044 Mass. Ave.,
Assistant in Physiology Cambridge

EDWARD VALENTINE BULGER, D.M.D. . . . 513 E. Broadway,
Instructor in Clinical Dentistry S. Boston

ALLAN JAMES MacDONALD, D.D.S. . . . . 16 Arlington St.
Demonstrator of Clinical Dentistry

HOWARD WARDWELL CHURCH, D.M.D. . . . . 471 Hope St.,
Instructor in Clinical Dentistry Bristol, R. I.

WALTER FREEMAN NOLEN, M.D. . . . . 535 Beacon St.
Instructor in Anatomy

CHARLES MARDEN PROCTOR, D.M.D. . . . . . . 15 Beacon St.
Demonstrator of Clinical Dentistry

JOSEPH WILLIAM SHAY, D.M.D. . . . . 238 Warren St., Roxbury
Demonstrator of Clinical Dentistry

WALTER HENRY GRANT, D.M.D. . . . . 107 Massachusetts Ave.
Demonstrator of Clinical Dentistry

JAMES FRANCIS COUPAL, B.S., M.D. . . . . 2 Center St., Roxbury
Assistant in Histology

GILMORE COLBY DICKEY, D.M.D. . . Upham's Corner, Dorchester
Instructor in Crown and Bridge Work

WILLIAM HENRY EATON, D.M.D. . . . . 419 Boylston St.
Instructor in Clinical Dentistry

HECTOR GEORGE RISEGARI-GAI, D.M.D . . . . 85 Pleasant St.,
Instructor in Clinical Dentistry Dorchester

ALBERT JOHN ADAMS HAMILTON, M.D. . . 409 Marlborough St.
Assistant Demonstrator of Anatomy

ARTHUR HERBERT McINTOSH, D.M.D. . . . . 687 Boylston St.
Assistant in Crown and Bridge Work

JOSEPH ALOYSIUS MEHAN, M.D. . . . . . . 4 Park St., Lowell
Instructor in General Chemistry

EVERETT MITCHELL BROWN, D.M.D. . . . 204 Huntington Ave.
Instructor in Operative Technics

WILLARD SAWTELLE DAVIS, D.M.D. . . 1034 Hyde Park Ave.,
Demonstrator of Clinical Dentistry Hyde Park

EDWARD BAILEY BRANIGAN, D.M.D. . . 2 Commonwealth Ave.
Instructor in Clinical Dentistry

WILLIAM HENRY CANAVAN, D.M.D . . . 648 Beach St., Revere
Demonstrator of Operative Technics

HAROLD DUNCAN DARLING, D.M.D. . . . . . . 1103 River St.,
Instructor in Clinical Dentistry Hyde Park

ALBERT GEORGE FITZPATRICK, D.M.D. . . . . 697 Broadway,
Instructor in Clinical Dentistry West Somerville

NAPOLEON JOSEPH GOULET, D.M.D. . . 254 Main St., Marlboro
Instructor in Clinical Dentistry

HUGH CHARLES MAGUIRE, D.M.D. 715 Centre St., Jamaica Plain
Instructor in Clinical Dentistry

GEORGE FRANCIS McINTYRE, M.D. . . . 5 Dana St., Cambridge
Assistant Demonstrator of Anatomy

ARTHUR LINWOOD MORSE, D.M.D. . . . . 151 Market St., Lynn
Instructor in Orthodontia

WALTER WESTWOOD, D.M.D. . . . 9 Bellingham Ave., Beachmont
Instructor in Clinical Dentistry

CHARLES EDWARD WHITNEY, D.M.D. . . . . Milford
Instructor in Clinical Dentistry

EUGENE TODHUNTER VINCENT, D.M.D., M.D. . . . .
Demonstrator of Clinical Dentistry 93 Massachusetts Ave.

NATHANIEL WOODBURY BRAGDON, D.M.D. . . . 21 Maple St.,
Demonstrator of Clinical Dentistry Danvers

WALTER EMERSON BRIGGS, D.M.D. . . 35 So. Main St., Attleboro
Instructor in Clinical Dentistry

JAMES ELLIOTT COX, D.M.D. . . . . . 56 High St., Charlestown
Demonstrator of Clinical Dentistry

JAMES J. DUDDY, D.M.D. . . . . 115 Cottage St., Brockton
Assistant in Orthodontia

JOSEPH CORNELIUS GETHRO, D.M.D. . . . 848 Washington St.,
Instructor in Clinical Dentistry Norwood

HARRY WINFIELD PERKINS, D.M.D. . . 29 Commonwealth Ave.
Assistant in Orthodontia

ROY CHURCHILL SKINNER, A.B., D.M.D., 118 Commonwealth Ave.
Demonstrator of Clinical Dentistry

CHARLES BUTLER WRY, D.M.D. . . . 60 Mountain Ave., Revere
Demonstrator of Clinical Dentistry

FREDERICK EDWARD GRANT, D.M.D. . . Boyden Sq., E. Dedham
Instructor in Clinical Dentistry

FRANCIS RANDOLPH HENDERSON, D.M.D. . . . 65 Clark St.,
Instructor in Clinical Dentistry Everett

EDWIN JOHN MORSE, D.M.D. . . . . 541 Boylston St.
Instructor in Prosthetic Dentistry and Oral Prophylaxis

RENE LUCIEN PETZOLDT, D.M.D. . . . . . 64 West Newton St.
Demonstrator of Clinical Dentistry

FRANCIS WHITE REGAN, D.M.D. . . . . 2 Park Sq.
Demonstrator of Clinical Dentistry

MAX ROSENTHAL, D.M.D. . . . . 2 Park Sq.
Demonstrator of Clinical Dentistry

WILLIAM LADD MOODY, D.M.D. . . . 38 Broadway, Newport, R. I.
Instructor in Clinical Dentistry

GEORGE ALLEN SPRINGALL, D.M.D. . . . 442 Main St., Malden
Assistant in Orthodontia

WILLIAM CHARLES TANNEBRING, D.M.D. . . . 163 Cabot St.
Instructor in Clinical Dentistry Beverly

ROBERT CHESLEY FOSTER, D.M.D. . . . 1510A Dorchester Ave.,
Assistant in Crown and Bridge Work Dorchester

HARRY AUGUSTUS GREENE, D.M.D. . . . . 23 Magazine St.,
Instructor in Clinical Dentistry Cambridge

ARTHUR WARREN HAYES, D.M.D. . . . . 106 Market St., Lynn
Assistant in Orthodontia

EDWARD ALBERT KINLEY, JR., D.M.D. . . . . 419 Boylston St.,
Assistant in Operative Technics

HARRY CLIFFORD RYDER, D.M.D. . . . 15 Warren St., Stoneham
Instructor in Clinical Dentistry

HAROLD WOODBURY SHEDD, D.M.D. . . . 815 Washington St.,
Instructor in Clinical Dentistry Newtonville

ALFRED SELDON WASS, D.M.D. . . 109 Highland Ave., Somerville
Instructor in Clinical Dentistry

ALFRED VALENTINE COGAN, D.M.D. . . 651 Broadway, S. Boston
Assistant in Crown and Bridge Work

CHARLES ROMANDEL GALE, D.M.D. . . 31 Edson St., Dorchester
Assistant in Crown and Bridge Work

HAROLD FRANCIS HART, D.M.D. . . . 19 Warner St., Dorchester
Assistant in Crown and Bridge Work

JOHN LEO KING, D.M.D. . . 941 Walnut St., Newton Highlands
Instructor in Prosthetic Dentistry

SAMUEL DEAN ROUNDS, D.M.D. . . . . 80 S. Main St., Reading
Instructor in Prosthetic Dentistry

FRED EMIL SIMM, D.M.D. . . . . 16 Holt St., Waverly
Instructor in Prosthetic Dentistry

LEON BARTLETT WILLEY, D.M.D. . . . . 711 Boylston St.
Instructor in Prosthetic Dentistry

FRANK ADELBERT WILLIS, D.M.D. . . . . 419 Boylston St.
Assistant in Crown and Bridge Work

OTHER OFFICERS

EDMUND WILBUR KELLOGG . . . . 24 Milk St., Boston
Assistant Treasurer

EUGENE EVERETT SHEPARD . . . 43 Boston Ave., W. Medford
Bursar

LINA A. MAYO . . . . Milton
Stenographer

LILLIAN M. TATTAN . . . . Somerville
Clerk to Secretary

MARY WRIGHT RICHARDSON . . . . 884 Huntington Ave.
Clerk of the Department of Clinical Dentistry

SARAH ELIZABETH MILLER . . . . . . 206 Massachusetts Ave.
Clerk of the Department of Prosthodontia

FRANCES WILDER . . . . 28 Greenleaf St.
Matron of the Department of Anesthesia and Extraction

THERESA E. STUBBS . . . . 7 Sussex St.
Clerk in Department of Crowns and Bridges

STANDING COMMITTEES OF THE DENTAL SCHOOL

The Dean and the Secretary are members of all Committees, *ex officiis*

ADMINISTRATION.—The President, Drs. Bates, Johnson, Farris, Strout, and Keltie.

ADMISSION.—Drs. Leary, Bates, Dearborn, and Professor Wren.

LIBRARY.—Drs. Bates and Houston.

INSTRUCTION.—Drs. Johnson and Bates.

CATALOGUE.—Drs. Bates and Dearborn.

WOMEN'S ADVISORY COMMITTEE.—Drs. Elizabeth A. Riley, Olga Cushing-Leary, and Edna Weil-Dreyfus.

LABORATORY ASSISTANTS

Anatomy

WILLIAM E. BROWNE M.D.	Boston
ALFRED W. BERR	Rockville, Conn.
JAMES H. ERLENBACK	Dorchester
ROY J. HEFFERNAN	Somerville
RICHARD B. LEITH	Greenfield
ALEXANDER MILEAU, JR.	Lewiston, Me.

General Chemistry

F. H. KILLAM	Somerville
W. F. SMITH	Malden
M. W. LEWIS	W. Somerville

Physiology

ALFRED E. GALLANT	Waltham
JOHN DUFF, JR.	Charlestown

Histology

ASADOOR MARKARIAN	Worcester

Tufts College Dental School

416 Huntington Avenue

Boston, Mass.

The Dental School, formerly the Boston Dental College, became an incorporate part of Tufts College in 1899, under a special act of the legislature. It was incorporated under its former name in 1868, and is a firmly-established dental school of forty years' standing, with a large and distinguished body of alumni. Its transfer to Tufts College was in consequence of the new anatomical laws of the State, and because it was felt by its former board of trustees that the advance in dental education rendered it desirable that the purely scientific part of its curriculum should be pursued in connection with a medical school.

The course of instruction in this institution embraces three academic years of eight months each. The studies of the first year, and a portion of those of the second year, are given in connection with those of the Medical School. Instruction is by means of lectures, demonstrations, laboratory work, and recitations, in anatomy, physiology, histology, chemistry, materia medica, pathology, therapeutics, bacteriology, principles of surgery, hygiene, theory and practice of dentistry, oral surgery, and in operative, clinical, and prosthetic dentistry, orthodontia, and dental technics.

The infirmary, under the personal direction of the Professor of Clinical Dentistry, assisted by a corps of demonstrators, is open daily through the year, except during a part of June, the whole of July and August, and a part of September. In the abundance and variety of its clinical material it furnishes an unsurpassed opportunity for the study of oral surgery and of dentistry in all its branches.

The laboratory of the prosthetic department is provided with perfect facilities for every variety of dental work. Every student is required before graduation to present satisfactory specimens of the different forms of mechanical work made by himself in the laboratory of the School, and under the supervision of the Professor of Prosthetic Dentistry.

Further opportunities for instruction are furnished by the valuable clinics and operations at the large hospitals of the city, which can be visited by the matriculates of this institution. Numerous operations upon the face and oral cavity are performed before students on public operating-days, and all connected with the School are urged to avail themselves of the facilities thus offered.

THE BUILDING

The building is occupied by the combined Medical and Dental Schools of Tufts College, and was built in 1900, as it was found necessary to provide increased laboratory facilities owing to the rapid growth of the schools. Special attention is called to the dental infirmary which occupies the first floor of the dental wing. This room, 125 by 29 feet, is equipped and arranged in a manner similar to the operating room of a hospital; aseptic chairs, cuspidors and brackets have been especially constructed for this school. Steam sterilizers have been provided for the disinfection of instruments, and it is believed that by these modern applications of asepsis to dentistry, the infirmary is among the most complete dental infirmaries in this country. The prosthetic department, which corresponds in size to the infirmary, is equipped in the most approved modern fashion. For this department electric power is supplied. The lower floor of the dental wing is devoted to operative technics and to the department of anaesthesia and extraction. In the latter department, the most improved apparatus for the administration of nitrous oxide gas is provided, and there is a recovery room under the charge of a professional nurse, who is in daily attendance. A surgeon connected with the Medical School is present on occasions when ether is administered.

Owing to the rapid growth of the School, it has been found necessary to provide more and larger quarters for lectures and laboratory work. A fourth story has been added, and the building has been largely remodeled. Three new lecture rooms have been added, giving a total of six lecture rooms, the largest seating 400 and the smallest 100. Each room has an excellent seating arrangement, and there is a sufficient equipment of opaque projectors and lantern slide apparatus. A new laboratory for the department of chemistry has been constructed on the fourth floor, the laboratory of the department of pathology and bacteriology has been renovated and enlarged, and the laboratory of the departments of histology and physiology has been completely remodeled. The building now has every possible facility for the most recent and advanced laboratory instruction.

CLINICAL FACILITIES

The clinical advantages offered are unsurpassed. In addition to the work in the School Infirmary, students are assigned to the dental clinics at the Boston Dispensary, the Mount Sinai Hospital, the Hull House Dispensary, and the City Institution at Deer Island. In these institutions they receive practical instruction under the direction of instructors in the School.

Subjects of Instruction

ANATOMY

The course in anatomy is given throughout the first half of the first year. It consists of five lectures and two recitations weekly with the class, and of special demonstrations on the cadaver. In addition, during the first four weeks of the course six hours a week are devoted to section work in Osteology. Each student is required to dissect two parts, to the satisfaction of the Demonstrator of Anatomy, before taking the final examination. Record of attendance and of the quality of the work done in the dissecting room will be kept, and will largely determine the standing of the student in the class.

CHEMISTRY

The course in general chemistry consists of descriptive chemistry and qualitative analysis, with so much of theoretical chemistry as is necessary for a proper understanding of the subject.

The classification of the carbon compounds is also taken up at considerable length, and special reference is made to those which are of interest in the study of medicine. The instruction is by lectures, recitations, and practical work by the students in the laboratory. There are five lectures, two recitations, and six or more hours of laboratory work for each student, every week during the first semester. Much attention is given to qualitative analysis for the sake of the valuable training which it imparts, and the knowledge of chemistry which is incidentally gained. The importance of this knowledge is evidenced by the fact that it is the only non-professional subject that is required in most dental schools. The aim is to impart such information in chemistry as is necessary to the intelligent dentist. At the same time any who wish to pursue the study further than is required of every graduate may do so by special arrangement.

During the second year this preliminary training in chemistry is followed by lectures, recitations, and laboratory work in dental chemistry. The metals, with their alloys and salts as used in dentistry, the bones and the teeth, the saliva, and the chemistry of the mouth are carefully studied. The high importance of the many applications of chemistry to the dental profession is fully recognized.

PHYSIOLOGY

The course in physiology is given throughout the latter half of the first year. It consists of five recitations, two lectures, and three conferences for every student each week, the preparation of a technical written paper, and extra demonstrations.

In the recitations, familiarity with the substance of an assigned text-book and with the Syllabus is required. The lectures set forth the principles of general physiology, and suggest some of its relations to the allied sciences, especially anatomy. The conferences give volunteers opportunity to become familiar with the literature on interesting physiological topics, which are then presented briefly in written reports and freely discussed by the class. Record both of the attendance and of the quality of the work done in the recitation-room will be kept, and, with the conference, will help to determine the standing of the student in the department. In addition, a three-hour written examination covering the entire scope of the year is held at the completion of the work, besides important subsidiary written examinations monthly.

By thus concentrating attention upon physiology during an adequate period, it is hoped that a thorough and indispensable grounding in the functions of the normal human organism will be acquired. Advanced work in physiology will be provided for competent students, by special arrangement with the head of the department, the constant aim being to adapt the labors of each student both to his needs and to his capabilities.

HISTOLOGY

The subject of histology covers the first half of the first year. The work during the first half of the allotted time will be identical with that of the students in the Medical School. This part of the subject covers the study of the elementary tissues, treated comprehensively, beginning with their origin in the embryo. Dental histology will be taught during the second year. In this connection particular attention will be given to the study of the minute anatomy of the tooth. The development of the teeth will also receive careful treatment. A training which gives the student a knowledge of the origin and history of the dental germ lays a suitable foundation for the dentist.

The department is equipped with microscopes which, on the payment of a small fee, will be at the service of such as cannot furnish instruments of their own.

OPERATIVE DENTISTRY

In operative dentistry the instruction is both didactic and clinical. Lectures are given covering the whole field, familiarizing the student with all known methods, the conditions under which different filling materials are used, and the most approved manipulation of the same. Many lectures are followed by clinics before divisions of the classes, where attendance is obligatory. By this means every detail of the operation is impressed upon the mind of the student. Great emphasis is placed upon the preparation of cavities for filling. Instruction is further given concerning the pathological conditions of the mouth and the treatment of the same, exposed pulps, inflamed pulps, dead pulps, abscesses, inflammation of the peridental membrane, and allied subjects. Special attention is given to the preparation of cavities for porcelain filling, and the manipulation of the same. Prophylaxis also is taught, under improved systematized methods.

OPERATIVE TECHNICS*

The technical laboratory is situated on the lower floor, and is exceptionally well lighted from three sides. It is equipped with benches having lock drawers for each student, and has power lathe and other implements for convenient use.

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* NOTE.—The operations in the technical departments require a very large number of natural teeth, and a sufficient supply is sometimes difficult to get. It will therefore be to the interest of students if they will bring with them all the extracted teeth they can obtain.

Instruction in this course will be by lectures, illustrated by models and drawings, and by practical work on the part of the student. The student's work will include the study of the forms of teeth, with carving in ivory; study of the position and form of pulp chambers and canals, with dissection of teeth; proper methods of treating and filling pulp canals, with operations on extracted teeth, porcelain inlay work, with practical examples, also proper methods of forming cavities for filling, and the manipulation of all filling materials, will be included.

CLINICAL DENTISTRY

The method of instruction in clinical dentistry is by clinical lectures to the students of each class, accompanied by practical demonstration of various operations on the teeth and neighboring tissues.

Ample opportunity for work in practical operative dentistry is furnished in this department, and the student, by actual practice, receives training in the various dental operations, and in the diagnosis and treatment of diseased conditions of the mouth and teeth.

PROSTHODONTIA

The instruction in prosthodontia consists of a graded course of didactic lectures to the entire class, illustrated by models and diagrams, on the nature, properties, and manipulation of the various materials used in making artificial dentures, crowns, and bridge-work, preparatory to, and in harmony with, the laboratory work in prosthetic dentistry. These lectures extend through the three years of the course.

PROSTHETIC DENTISTRY

Particular attention is given to practical manipulation of vulcanite, celluloid, aluminum, and cast metal, for dentures; to gold-plate work, to preparation of plate for continuous gum and the application of continuous gum to crown and bridge work, as well as the construction of gold crowns and bridges. The natural form, color, and arrangement of the teeth, together with the entire range of procedure, from taking the impression to the completion of the case and its proper adjustment in the mouth, are thoroughly demonstrated.

ORTHODONTIA

The department of orthodontia offers two courses of lectures, dealing with the subject from an eclectic standpoint. The Junior year is devoted to the theory of normal and malocclusion, history, diagnosis, etiology, technique and uses of appliances, continuing in the Senior year with the practical application of the principles of orthodontic procedure to the different classes of malocclusion and to actual cases. The lectures are illustrated by charts and lantern projections and demonstrated on an adjustable model of heroic size, on which can be shown, to the entire class, normal occlusion in all its aspects, as well as any possible cases of malocclusion. Four hours a week in the Senior year are given to clinical work. Each student is required to conduct at least one case, doing all of the work under the instruction and supervision of the professor and an adequate corps of instructors. A consultation service has been established for the benefit of graduate dentists, through which the advice of this department can be obtained in the conduct of private cases.

PHARMACOLOGY

Instruction in pharmacology consists of lectures, recitations, and laboratory exercises, twelve hours a week throughout the second half-year. Especial attention is given to the physiological action of drugs in its relation to their therapeutical application, and to the relation always existing between therapeutics and physiological and pathological laboratory work. The laboratory course is designed to familiarize the student with all medicinal preparations and processes, and consists of exercises in which the class in sections is led to this result practically.

Prescription writing and the metric system will receive careful attention. Such of the recent additions to *materia medica* as are deemed worthy will be properly considered.

PATHOLOGY AND BACTERIOLOGY

The subjects of pathology and bacteriology will be considered together. This method permits showing the relation of bacteria to the disease processes which they produce. The work will consist of lectures, required laboratory work, and demonstrations. The student is made acquainted with the bacteria of the mouth, and is required to cultivate and study the important organisms. He is expected to carry out experiments to demonstrate the production of artificial caries. The subject of general pathology will be thoroughly covered. The special pathology of the mouth, and of the respiratory and intestinal tracts, will be given particular attention. Inflammation, especially the infectious types, among which are the lesions produced by the pyogenic bacteria, will be carefully considered. The process of repair in soft tissues and bone, and tumors of the mouth and face, are studied from sections of human and experimental lesions, and illustrated by demonstrations of gross specimens. In connection with the study of infectious processes, the specific bacteria will be cultivated and studied. Diseases of the circulatory system are illustrated by lectures and gross demonstrations. The methods of sterilization and their relative efficacy are practically studied, and tests are made of a large series of antiseptic and disinfectant substances.

The pathological and bacteriological department of the School occupies over four thousand square feet of floor space, with a frontage of one hundred and sixty feet. It is excellently lighted. The laboratory furnishes accommodation for one hundred students, and is supplied with all the materials necessary for thorough work.

THEORY AND PRACTICE OF DENTISTRY

The instruction in the theory and practice of dentistry is designed to teach the most advanced scientific discoveries in relation to this art.

It will include such subjects as the action of mouth bacteria, diseases dependent upon dental lesions, dental prophylaxis, oral hygiene, and the ethics of dental practice. The course will be arranged to harmonize with and to supplement the work of the clinical department.

SURGERY

The course in surgery consists of a systematic series of lectures covering its principles. These lectures explain the fundamental facts which should be thoroughly understood by all students who propose to treat any portion of the human body. The lectures are not limited to surgery of the mouth, although especial attention is given to this part of the subject, but are intended to give the dental student a sound knowledge of surgery in general.

Asepsis and anesthesia are minutely discussed, and practically demonstrated in the infirmary, in conjunction with the Professor in Operative Technics and Anesthesia. The student is carefully instructed in the administration of ether and of nitrous-oxide gas. In addition to the daily instruction, one morning in each week is devoted wholly to this work, the class being divided into sections. At this weekly demonstration, cases are presented exemplifying the choice of an anesthetic in the particular case. The danger signals of anesthesia are considered, and the proper treatment explained. Local anesthesia receives careful attention, and its limitations are pointed out.

The technic of aseptic and antiseptic methods in dental work is thoroughly explained, and shown in connection with the demonstrations of anesthetics.

ANESTHESIA AND EXTRACTION

The extracting room, a well-lighted apartment, is supplied with all needful instruments and appliances for extracting teeth and for the performance of the simpler operations in surgery. Ample waiting rooms are adjacent, and also rooms for the care of patients after anesthesia. Administrations of nitrous-oxide gas and ether are made daily. The room is at all times under the personal supervision of the Instructor in Anesthesia.

Requirements

FOR ADMISSION TO THE FIRST-YEAR CLASS

Candidates are admitted in two ways:

1. By credentials.
2. By examination.

1. Admission by Credentials

Graduates of approved colleges or universities, graduates of approved high schools, and students holding Regent's Certificates of the State of New York, are admitted without examination. Candidates west of New York may present full statement of their record in the courses pursued, for consideration by the Committee on Admission.

2. Admission by Examination

Candidates for admission by examination must have received adequate preparation in certain subjects falling in two groups, known respectively as the Required and the Elective Group. A unit represents a year's study in any subject in a secondary school, representing approximately a quarter of a full year's work. Fourteen units are required for admission. A student who has failed in not more than five units may be admitted subject to conditions which he must make up before beginning the studies of the second year.

The Required Group

Elementary English, 3;
An Elementary Foreign Language, Ancient or Modern, 2;
Elementary Physics, 1;
Algebra, 1½;
Plane Geometry, 1.

Candidates are required to present all the subjects of the Required Group, and a selection of subjects from the Elective Group, aggregating 5½ units, according to the value indicated below.

The Elective Group

Elementary

Greek, 2
Latin, 2
French, 2
German, 2
History, 1
Chemistry, 1
Botany, 1

Zoology 1
Geology and Geography, 1
Mechanical Drawing, 1
Freehand Drawing, 1
Shop Work, ½ to 2
Economics, ½
Anatomy, Physiology, and Hygiene, ½

Intermediate

Latin, 1
French, 1

German, 1

Advanced

Greek, 1
Latin, 1
French, 1
German, 1

History
Algebra, ½
Trigonometry, ½
Solid Geometry, ½

Detailed information concerning the amount and character of the work required in preparation will be sent on application.

ADVANCED STANDING

Students who have taken courses in other accredited dental schools are admitted to advanced classes upon presenting satisfactory evidence that they have passed the examinations required for the class they desire to enter.

Students presenting evidence of a course equivalent to the course in general chemistry given in the first year are allowed to anticipate the subject upon passing the fall examinations.

PROMOTION

Students who have passed a majority of the examinations of the first-year class, and all entrance conditions, may be promoted to the second-year class. Students who have passed all the first-year and a majority of the second-year examinations may be admitted to the third-year class.

GRADUATION

Candidates for the degree of Doctor of Dental Medicine must have fulfilled the following minimum requirements:

1. They must present a certificate that they are twenty-one years of age and of good moral character.

2. They must have attended at least three full courses of lectures in some accredited dental school, the last of which shall have been at this School, and no two courses in the same twelve months.

3. They must have passed all the examinations required, and have satisfied the professors of clinical and prosthetic dentistry of their ability to meet satisfactorily the requirements of the profession.

4. They must have satisfactorily dissected under the direction of a demonstrator of anatomy.

5. They must have paid all fees.

CHANGE OF REQUIREMENTS

The Faculty reserve the right to change all requirements without further notice.

HONORS

Students who have attended three full courses of lectures at this School and have attained an average of ninety per cent. in their examinations shall be eligible to "*summa cum laude*"; and students who have attained an average of eighty per cent. shall be eligible to "*cum laude*" in connection with the degree received.

STANDING AND CERTIFICATES

At the end of the session a certificate of his standing for the year is sent by mail to each student. No marks will be sent or credit given to any student who is in arrears with the Bursar.

EXAMINATIONS

There are two periods of examination held each year in the school building. Examinations are in writing, and are held at the close of the course in the spring, and previous to the opening of the regular course of lectures in the fall.

The spring examinations are for:

(*a*) Students commencing the study of dentistry.
(*b*) Promotion.
(*c*) Graduation.

The fall examinations are for:

(*a*) Students commencing the study of dentistry.
(*b*) Removal of conditions in:
   1. Previous entrance examinations.
   2. The first-year course.
   3. The second-year course.

Students intending to take the fall examinations (other than entrance) *are required* to notify the Secretary on or before August 30.

The fall examinations for the removal of conditions (other than entrance) will commence Monday, September 7, 1914, at 10 A.M. A detailed list of the subjects in which examinations are given, with the day and hour of each, will be mailed after August 30, on application.

REGISTRATION AT EXAMINATIONS

In each examination (except those for entrance) students who fail to sign the registration blank provided for the purpose shall receive no credit for that examination.

The examinations in course are as follows:

EXAMINATIONS

First Year. *Finals* in Anatomy, Physiology, General Chemistry, Histology, and Operative Technics.
Progress in Prosthetic Dentistry and in Prosthodontia.

Second Year. *Finals* in Materia Medica, Pharmacology, Dental Chemistry, Pathology, Bacteriology, and Dental Histology.
Progress in Operative Dentistry, Clinical Dentistry, Orthodontia, Prosthetic Dentistry, Prosthodontia, and Crown and Bridge Work.

Third Year. *Finals* in Oral Surgery, Orthodontia, Theory and Practice, Operative Dentistry, Clinical Dentistry, Prosthetic Dentistry, and Prosthodontia, and Crown and Bridge Work.

TEXT BOOKS

The first book mentioned is preferred as a text-book, the others being recommended as collateral reading.

Anatomy.—Gray, Weisse, Quain, Morris, Cunningham, Solatta, McMurrich.

Bacteriology.—Abbott, Woodhead, Sternberg.

Chemistry.—Simon's Manual, Witthaus, Storer and Lindsay, A. H. Elliott's Qualitative Analysis, Mitchell's Dental Chemistry.

Dental Histology and Microscopy.—Syllabus, Stohr's Histology, Tome's Dental Anatomy (latest edition).

Dental Science and Operative Dentistry.—Kirk's Operative Dentistry, Garretson's Oral Surgery, Black's Dental Anatomy, Weeks's Operative Technics, American System of Dentistry, Harris's Practice of Dental Surgery, Taft's Operative Dentistry.

Hygiene.—Egbert's Hygiene and Sanitation.

Materia Medica and Therapeutics.—Hare, Sollman, Cushny Thornton's Dose Book and Manual of Prescription Writing.

Medical Dictionary.—Dunglison.

Orthodontia.—Malocclusion of the Teeth, Angle (7th edition); Orthodontia, Guildford (4th edition); Internal Anatomy of the Face, Cryer.

Pathology.—Syllabus, Miller's Micro-Organisms of the Human Mouth, Burchard's Dental Pathology.

Physiology.— Syllabus, Dearborn's Text-Book of Physiology, Howell, Landois, Verworn, Schäfer, Morat, Hutchinson.

Practice of Surgery.—American Text Book, Marshall's Injuries and Surgical Diseases of the Jaws, International Text-book of Surgery..

Prosthetic Dentistry.—Essig's American Text-book of Prosthetic Dentistry, Richardson's Mechanical Dentistry, Goslee's Crown and Bridge Work, Gilbert's Vulcanite and Celluloid.

FEES AND EXPENSES

A matriculation fee of *five dollars* is payable each year.

A charge of *one hundred and fifty dollars* for tuition is payable in advance. If not paid before November 1, there will be an additional charge of *five dollars*.

If desired, the tuition may be paid in instalments, in which case an additional charge of five dollars is made, and the fees are then paid as follows: —

First payment: — Five dollars for matriculation fee and seventy-five dollars on account of the tuition, a total of *eighty dollars*, payable at the beginning of the first semester.

Second payment: — Seventy-five dollars, the balance of the tuition, and five dollars, the additional charge, a total of *eighty* *dollars*, payable at the beginning of the second semester, or before February 1.

There is no charge for laboratory supplies. Anatomical material will be furnished at cost.

No student will be admitted to the exercises of the first half-year who has not paid his matriculation fee and at least one-half the tuition, and no student will be admitted to the exercises of the second half-year who has not paid his fees in full.

Students leaving the School have no claim for tuition paid.

Students who have failed twice in a subject are required to pay a fee of five dollars for each subsequent examination in that subject.

POST-GRADUATE FEES

Post-graduate fee for graduates of other schools . .	$150.00
Single course	50.00
Post-graduate fee for graduates of this School . . .	60.00
Single course	30.00
Anatomical material	at cost

The Bursar of the College will be at the School Monday, Wednesday, and Friday, 2.30 to 5.00 P.M., from October 1 to June 1.

There are no scholarships connected with the School.

The expenses of living in Boston need not exceed those in small cities and villages. Good board, including room, heat, and light, can be obtained in the vicinity of the School at from $5.50 to $7 a week. Students will not be allowed to occupy rooms disapproved by the Faculty.

OUTDOOR DEPARTMENT

Clinical Dentistry

For many years it has been the custom of the authorities of this School to furnish to certain charitable and penal institutions qualified dentists for the purpose of alleviating cases of actual suffering. Applications for an extension of this service should be made to E. A. Johnson, D.M.D., Department of Clinical Dentistry, Tufts College Dental School, Boston, Mass.

Prosthetic Dentistry

In a manner similar to the above it has been the custom of the authorities of this School to furnish to the inmates of certain institutions for the aged, at the nominal charge of the cost of materials, artificial teeth and appliances. Institutions desiring to avail themselves of the privilege should apply to Walter E. Farris, D.D.S., Department of Prosthetic Dentistry, Tufts College Dental School, Boston, Mass.

STATE BOARD EXAMINATION

Students shall not take a State Board Examination in Dentistry previous to the time of final examinations of the third year, without written permission from the Secretary of the Dental School.

General Information

The Tufts College Dental School is a member of the National Association of Dental Faculties, and conforms to its rules, as well as to those of the National Association of Dental Examiners.

All students must be registered and in attendance within ten days after the commencement of lectures.

LIBRARIES

The students of this School have free access to the Dental School Library, to the Library of Tufts College, to the Boston Public Library, and to the Boston Medical Library.

The library at the Dental School is open daily from 9.00 a. m. to 5.00 p. m., except Sundays and holidays. This library is intended to provide *text books for reference*, and the latest editions of all text books used in the School are furnished. These cannot be taken from the Reading Room. In addition, the library contains a large number of reference books in general medicine and general surgery, and in all special branches of each. These works are loaned to the student free of charge, and can be taken out. Files of recent dental journals are a valuable addition to the school library.

The Boston Medical Library, which is situated near the School, has one of the largest and most complete collections of medical works in existence. It contains not only bound volumes of every important book in medical literature, but also a very extensive collection of monographs and pamphlets on special subjects. All the leading medical journals are on file for inspection. The Boston Medical Library extends its privileges, under certain conditions, free of charge to students of this School. Its rooms are open daily from Oct. 1 to May 31, from 9.30 A. M. to 10.00 P. M., except Sundays and holidays. The hours on Saturdays are from 9.30 A. M. to 6 P. M.

SESSIONS OF THE SCHOOL

The annual course of lectures begins on the last Wednesday in September of each year, and continues until the last Wednesday in May. The annual course of lectures for 1914–15 will commence Wednesday, September 30, 1914, at 3 p.m.

VACATIONS

There are no exercises at the School during three days at Thanksgiving, ten days at Christmas, and the week beginning April 5, nor upon Columbus Day, Washington's Birthday Patriots' Day, and Memorial Day.

APPLICATIONS

Students who intend to enter the School for the first time must obtain from the Secretary an application blank, which they are required to fill out and return to him. Application blanks will be mailed upon request.

REGISTRATION

Registration is required of all students, each year. Registration for the Session 1914–15 will commence Wednesday, September 16, and will close Saturday, October 10, 1914.

Registration is conducted at the school building only.

ANNOUNCEMENT

Requests for the annual catalogue, and all other communications relating to the business of the School, should be addressed to the Secretary, FREDERIC M. BRIGGS, M.D., Tufts College Dental School, Boston, Mass.

Summer Courses

The following subjects are offered during the summer months :—

PHYSIOLOGY

A course in physiology will be given during the months of June and July by, or under the direction of, the Professor of Physiology. For particulars of the course application should be made to Dr. Dearborn.

HISTOLOGY

A summer course will be given under the direction of the Professor of Histology. Particulars as to the scope of this work, and the fee, may be learned upon application to Dr. Bates.

THE
BROMFIELD-PEARSON
SCHOOL

The Bromfield-Pearson Shcool

BOARD OF INSTRUCTION

WILLIAM L. HOOPER, A.M., Ph.D., Acting President

GARDNER C. ANTHONY, A.M., Sc.D., Dean
Professor of Technical Drawing

SAMUEL C. EARLE, A.M.
Professor of English

CONRAD A. ADAMS, B.S.
Instructor in Mechanic Arts

GEORGE F. ASHLEY
Assistant Professor of Technical Drawing

ALEXANDER DILLINGHAM, A.M.
Assistant Professor of Mathematics

MERRILL C. HILL, A.B.
Instructor in Modern Languages

The Bromfield-Pearson School

The Bromfield-Pearson School is intended to meet the wants of young men whose preparation for an Engineering course may be partially deficient in one or more of the required branches, but whose practice and experience in the applied part of Engineering may qualify them to pursue college work while making up these deficiencies. By this means an engineering education is made possible to those who may have been deprived of the opportunities for obtaining the necessary preparation, or who may have allowed considerable time to elapse between the high school and the college course. A mature mind, industrious habits, and a keen appreciation of the value of the higher education in Engineering are essential qualifications for engaging in this work.

As it is the intention of the Trustees to limit the membership to those earnest and somewhat mature students who cannot afford the time ordinarily required in the fitting school, candidates will not be received from manual training and high schools.

ADMISSION

Students intending to join the School must obtain from the Dean an application blank, which they are required to fill out and return. On receipt of this statement they will be informed as to the conditions of entrance and the program of studies which it will be possible to pursue.

REGULATIONS

Students are subject to all the rules governing members of the College.

All preparatory work must be completed during the year, as no student will be admitted to the School for more than one year.

Students admitted to college classes will be required to obtain a somewhat higher per cent. than the minimum requirement for engineering students.

On the satisfactory completion of the preparatory work students will be given a certificate of admission to the College. They will also receive credit for college work which may count toward a degree.

The President and the Dean have final authority concerning admission, promotion, and discipline.

EXPENSES

The tuition fee is one hundred and fifty dollars a year, payable as follows: seventy-five dollars on or before October 1, and the remainder on or before March 1.

A registration fee of five dollars is charged each entering student, and is payable at the time of registration.

No part of the tuition fee will be refunded to pupils who for any reason withdraw from the School before the close of the term for which the fee is paid.

The cost of table board is from $4.00 to $5.00 per week. Furnished rooms may be had at $1.50 or $2.00 a week. Other expenses vary with the economy of each student. Students living in the college dormitories furnish their own rooms.

The following estimates represent the fixed annual expenses: —

Tuition	$150.00	$150.00
Half-room rent	20.00	91.00
Board, $4.00 to $5.00 a week (36 weeks)	144.00	180.00
Physical training		15.00
Books, instruments, and supplies	15.00	25.00
Total	$329.00	$461.00
Registration-fee, for entering students		$5.00

For other information address GARDNER C. ANTHONY, Dean of the Bromfield-Pearson School, Tufts College, Mass.

The Harpswell Laboratory

INSTRUCTORS

J. STERLING KINGSLEY, Sc.D.
Director, and Professor of Biology, University of Illinois

HERBERT V. NEAL, Ph.D.
Professor of Zoology, Tufts College

In 1898 summer instruction in biology was given at South Harpswell, Maine, and in 1901 the College erected a small laboratory at that point, enlarging it in 1902. The location is admirably adapted for biological research, since the fauna of Casco Bay is extremely rich. Over forty papers have been published based on researches carried on in the laboratory. The laboratory is equipped with boats, dredges, glassware, apparatus, and reagents, for study on the lines of anatomy and embryology. There is also a small library of the most important works.

South Harpswell is two hours by steamer from Portland. It is at the extremity of a narrow peninsula ten miles in length, and has a cool climate. There are several hotels and boarding houses, where board and rooms may be had at five dollars a week and upward.

The Harpswell Laboratory will be open free during the summer of 1914, for research work only, under the direction of Drs. Kingsley and Neal.

For circulars and other information concerning the Harpswell Laboratory, inquiries should be directed to Professor J. S. Kingsley, Urbana, Ill., or to Professor H. V. Neal, Tufts College, Mass.

DEGREES AND HONORS

1912-1913

Fifty-Seventh Annual Commencement

June 18, 1913

HONORARY DEGREES CONFERRED

Doctor of Laws

Hosea Washington Parker
Robert Edwin Peary

Doctor of Science

George Alec Harwood
Alfred Church Lane

DEGREES CONFERRED IN COURSE

Bachelors of Arts

Mildred Elvera Anderson
Louise Anna Berthold (*cum laude*)
Frank Nelson Blanchard (*magna cum laude*)
Helen Louise Butler
Octavia Chapin
Marion Adeline Colby (*summa cum laude*)
Paul Dillingham
Mary Helen Dodd
Harold Lowell Etheridge
Frank Bates Fairbanks
Abby Rugg Field (*magna cum laude*)
Inez Marion Gray (*cum laude*)
Rose Greenberg (*summa cum laude*)
Johnson Washington Hill, B.D.
John Louis Keegen
Esther Lizzie Lovejoy (*cum laude*)
Isabella Gertrude Owler
Fred Odell Page
Ruth Evelyn Penniman
Etta Marion Phillips
James Hancock Rorty (*magna cum laude*)
Edith May Sanborn
Helen Rachel Scammon (*cum laude*)
Ruth Shepard (*cum laude*)
Philip Cushing Shute
Frank Hathaway Towsley (*summa cum laude*)
Charlotte Jane Waterman
Alma Gertrude Wiley
Alva Vivian Woode

Bachelors of Science

Harry Coombs
Senekerim Mardiros Dohanian
Vico Cacciatori Isola (extra ordinem as of the Class of 1912)
Lester Enoch Thacher

Bachelors of Science in Chemistry

Herbert Joseph Allen
Herbert Melville Carter
Antonio Cepero Clavell
Rufus Frost Harrington
Louis Ernest Monge
Wellington Rindge

Bachelors of Science in Civil Engineering

George Franklin Dennett
Fred Warren Flint
Harris Howard Freeman
Robert Chapman Mansfield
Leslie Ona Marden
Harry Louis Phelps
Jacob Max Sokoll (*magna cum laude*)
Lewis Edwin Sterling
Prentiss Willard Taylor (*cum laude*)

Bachelors of Science in Structural Engineering

Ralph Wight Atwater
Burt Alden Hazeltine
William Horner Hussey
George Adolph Lloyd
John Augustin McAuliffe
Conrad Nolan (*summa cum laude*)
Raymond Moulton Roberts
Ralph Edward Sargent
Joseph Andrew Tosi
Frederic Nixon Weaver (*summa cum laude*)
Leonard Swan Whippen (*summa cum laude*)

Bachelors of Science in Electrical Engineering

Vannevar Bush (*summa cum laude*)
Carl Emerson
Harold Lowell Etheridge
Joseph Michael Goodwin
Allen Gunnison Hooper, A.B.
Walter Leverett Jones
Stanley Hutchinson Lovering
Levi Wright Parker
Wendell Codding Phillips (*magna cum laude*)
Harry Louis Strecker
Henry Bernard Stryker

Bachelors of Science in Mechanical Engineering

Carlos Porfirio Echeverria
George Fisher
Charles Thomas Gould (*magna cum laude*)
Dana Aubrey Searle (*magna cum laude*)

Bachelors of Science in Chemical Engineering

Roger Ammiel Colman
Carl Larrabee Hartshorn

Bachelor of Sacred Theology

William Gaskin
Will Calvin Harvey
Peter John MacInnis

Doctors of Medicine

Arnold Noble Allen (*cum laude*)
Harold Musgrave Allen
Henry George Armitage (*cum laude*)
Elmer Stanley Bagnall (*cum laude*)
Karl Roland Bailey, M.D.
Harris Bass
Williams Atkins Bishop (*summa cum laude*)
Cecil Norbert Brady
Frank Nesdel Bresnihan (*cum laude*)
Otto Tiemann Brosius (*cum laude*)
Alfred Whittemore Brown (*cum laude*)

John Henry Burke (*cum laude*)
Henry Joseph Cabeceiras
Francis Stephen Caldicott(*cum laude*)
Harold Augustus Chamberlin (*cum laude*)
Alfred Peter Chronquest
Mary Ella Clarke (*cum laude*)
Fred Walter Comstock (*cum laude*)
Harold James Connor (*cum laude*)
James Francis Costello
Clyde Benjamin Covey
Charles Andrew Cullen
Francis Walter Currin
John Joseph Deacy
Ellsworth Joseph Murray Dickson(extra ordinem as of the Class of 1912)
George Alfred Felch (*cum laude*)
John Henry Flynn (*cum laude*)
Irving William Fraim
Benjamin Friedman (*cum laude*)
Eli Friedman (*cum laude*)
Louis Daniel Gilmore
Percy Berry Goetschius (*cum laude*)
Margaret Victorine Grogan (*cum laude*)
Andrew Doherty Guthrie (*cum laude*)
William Thomas Haley
David Morris Hassman (*cum laude*)
Richard Dunham Heap
Paul John Jakmauh
William Christian Jensen
Fred Durgin Jones (*cum laude*)
Edward Joseph Kelley
John Francis Kenney (*cum laude*)
Marion Edwena Kenworthy (*cum laude*)
Leo Thomas Kewer
Alfred James Leary
Alfred Mederic Lemay (*cum laude*)
Joseph Levek (*cum laude*)
Harry Leslie Franklin Locke (*cum laude*, extra ordinem as of the Class of 1912)
Eveline Burton Lyle, A.B. (*cum laude*)
James Alexander MacKenzie (*cum laude*)
Emily Clark MacLeod (*cum laude*)
John James Madden
Richard Felix McCoart, Jr.
Sidney Horace McPherson (*cum laude*)
Everett Albert Merrill
Richard Metcalf
Frank Alburtus Millett (extra ordinem as of the Class of 1912)
Francis Gabriel Miniter
William Armitage Moncrieff (*cum laude*)
Mary Teresa Veronica Moore (*cum laude*)
George Ernest Mott
John Joseph Mulvanity
Francis Augustine O'Reilly
Cyrus Brown Partington (extra ordinem as of the Class of 1912)
Socrates Yakovos Pavlides
Louis Eusebe Phaneuf (*summa cum laude*)
Arch Edwin Pope, M.D. (extra ordinem as of the Class of 1912)
Bernard Rabinovitz
Beatrice Alma Reed (*cum laude*)
James Joseph Regan
Frank Leo Sinclair Reynolds, M.D.
Charles Elvin Roderick (*cum laude*)
Walter Irenaeus Ryder
Edgar Floyd Sewall
Severo Pacheco Silva
Ralph Hayward Simmons (*cum laude*
Matthew Nicholas Thoennes (*cum laude*)
William Walton Varrell (*cum laude*)
Anthony Cæsar Ventrone (*cum laude*)
Perez William Wainshel
Harry Ray Wheet
Charles Henry Wilson
Arthur Clarendon Wright
Edward Wallace Young (*cum laude*)

Doctors of Dental Medicine

John Joseph Ahern, Jr.
Frederick Carroll Allen
Carl Skillings Briggs
Louis Browne
Manson Daniel Brown
Andrew Philip Bugler
Gregory Philip Cassidy
Joseph Edward Cheney
Dwight Richardson Clement
Alfred Valentine Cogan
Benjamin David Cohan
George William Curtis
James William Dailey
Raymond Merrill Davis
Frank Sparrow Delano (extra ordinem as of the Class of 1912)
William Lee Dickens
William Dacey Donovan
Joseph James Doyle
George Arthur Foley
Albion Rowell Fogg
Milburn Matthew Fowler
Charles Romandel Gale
George Henry Gerrish
William Francis Gibbons
Holland Gile
Samuel Carl Gould
Timothy Joseph Greany
Randolph Damon Greenbaum (extra ordinem as of the Class of 1912)
Harold Francis Hart
Rufus Joseph Howe
Frederic Joseph Hoye
Raymond Philip Huntoon
Joseph William Jantzen
Robert James Kelliher
Joseph Anthony Kelly
John Leo King (*cum laude*)
Harold Robbins Lamb (*cum laude*)
William Isidore Litch (*cum laude*)
Emily Mary Luck
Richard Conrad March
Lloyd Francis Marshall
Thomas Anthony McDonald
Henry John McMahon (extra ordinem as of the Class of 1912)
Abram Edward Melincoff (extra ordinem as of the Class of 1912)
Ralph Henry Metters
Joseph Max Moise
August Herman Morgner (*cum laude*)
Frederick Edward Morris
Carroll Parsons Moulton
Beatrice Eulalia Mulrey (extra ordinem as of the Class of 1912)
Cornelius Joseph Murray
Harold Edward Nash
John Nalchajian
Roger Joseph O'Donnell
Ralph Joseph Parker
Harry Porter
Joseph Eugene Redden
Mark John Rice
Samuel Dean Rounds
Peter Joseph Savage
Arthur John Shaw
John Leo Silva
Fred Emil Simm
Owen Patrick Slein
Robert Alexander Spratt (*cum laude*)
Simon Harry Springer
Arthur Oliver St. Andre
John Joseph Staincliffe
Hyman Stearns
Ralph Stolworthy
Joseph Francis Sullivan
Norman Hutchinson Tracy
William Bernard Traynor
Forrest Stanley Walker
Henry Patrick Walsh
Leon Bartlett Willey
Frank Adelbert Willis (*cum laude*)

Masters of Arts

Frank Leslie Hayford (Economics)
Marjorie Leslie Henry (Classics)

Masters of Science

Vannevar Bush (Electrical Engineering)
Titus Eugene Mergendahl (Mathematics)

Jackson College for Women

Bachelor of Arts

Dorothy Bartlett (*magna cum laude*)

Honors

Dorothy Bartlett (History and Public Law)

Commencement Parts

Frank Hathaway Towsley, Cand. A.B.: "Discontent—A Duty.
Harold Robbins Lamb, Cand. D.M.D.: "Dentistry and the Public."
*Otto Tiemann Brosius, Cand. M.D.: "Immunity."
Octavia Chapin, Cand. A.B.: "Recreation as a Social Force."
Vannevar Bush, Cand. B.S. and M.S.: "The Poetry of Mathematics."
William Gaskin, Cand. B.D.: "Christianity, The Solvent of the Social Crisis."

Honors

Frank Nelson Blanchard (Biology)
Vannever Bush (Electrical Engineering)
Marion Adeline Colby (German)
Abby Rugg Field (Greek)
Charles Thomas Gould (Mechanical Engineering)
Rose Greenberg (German)
Conrad Nolan (Structural Engineering)
Wendell Codding Phillips (Electrical Engineering)
Jacob Max Sokoll (Civil Engineering)
Dana Aubrey Searle (Mechanical Engineering)
Frank Hathaway Towsley (Mathematics, History and Public Law)
Frederic Nixon Weaver (Structural Engineering)
Leonard Swan Whippen (Structural Engineering)

Honorable Mention

Louise Anna Berthold (English)
Vannevar Bush (Structural Engineering)
Marion Adeline Colby (French)
Inez Marion Gray (History and Public Law)
Rose Greenberg (Philosophy)
Esther Lizzie Lovejoy (History and Public Law)
Conrad Nolan (Civil Engineering)
James Hancock Rorty (English and Philosophy)
Helen Rachel Scammon (Chemistry)
Ruth Shepard (Greek)
Prentiss Willard Taylor (Civil Engineering)
Frederic Nixon Weaver (Civil Engineering)
Leonard Swan Whippen (Civil Engineering)

* Excused

Awards of Prizes, 1912–1913

Scholarship of the Class of 1882

William Joseph Bennett

Scholarship of the Class of 1898

Walton Shepard Hall

Greenwood Prize Scholarship in Oratory

Lloyd Edgar Aldrich

Goddard Prize in Biology

Herbert Edmond Metcalf

Goddard Prize in Philosophy

Ruth Eliza Seavey

Moses True Brown Scholarship

Carroll Charles O'Neill

Alpha Omicron Pi Scholarship

Ella Hazel Macy

Alpha Xi Delta Scholarship

Annette Bassford MacKnight

Chi Omega Scholarship

Helen Elizabeth Hearsey

Rhetorical Prizes

First Prize

Wilfred Frederick Kelley

Second Prize

Frank Hathaway Towsley

Third Prize

Albert Walter Swenson

REGISTER OF STUDENTS

Department of Arts and Sciences

1913-14

[In the following list the course pursued by each student is indicated by the Italic letters immediately following the name. The signs used are as follows: courses leading to the degree of A.B., *ab;* to the degree of B.S. *bs* — in Civil Engineering, *ce;* in Structural Engineering, *st e;* in Electrical Engineering, *ee;* in Mechanical Engineering, *me;* in Chemical Engineering, *ch e*. The sign *e* is used for the first two years in the Engineering School as there is no differentiation made in the studies during the first two years.

The third column records the home address, which is in Massachusetts unless stated to be elsewhere. The fourth column gives the address at Tufts College, unless the street is printed in Italics, in which case it is a part of the home address.]

Graduate School

Resident Students

Gallupe, Harold Quimby *Everett* East, 10
B.S., 1911 Second Year Chemistry

Greany, Ellen Marie *Dorchester* *665 Columbia Rd.*
A.A. (Radcliffe), *1913 First Year Economics*

Johnson, Laura Katherine *Fenway, Boston* *The Stuart Club*
A.B. (Cornell), *1910 First Year History and Public Law*

Keegen, John Louis Charles *Brookline* West, 12
A. B., 1913 First Year History and English

Phelps, Edward Parkhurst *Greenwood* *42 Pitman Ave.*
B.S., 1912 Second Year Chemistry and Biology

Strong, William Millgrove *Everett* Dean, 14
B.S., 1913 First Year Economics

Thomas, Ann Eliza *Providence, R. I.* 17 Fairmount St.
Ph.B. (Brown Univ.), *1912 Second Year Economics* Tufts College

Non-Resident Students

Lunt, Forrest Sumner *Teachers' College, New York, N. Y.*
A.B., 1902 Second Year History and English *Horace Mann School*

Story, Chester Bradstreet *Wilkinsburg, Pa.* 1217 Mill St.
A.B., 1903 First Year English

School of Liberal Arts

Senior Class

Babcock, Lester Fowler	*bs*	*Lynn*	Paige, 13
Campbell, Donald Kenneth	*ab*	*Tyngsboro*	West, 26
Chandler, Warren Rufus	*bs*	*Medford*	East, 29
Cosgrove, Frederick Sylvester	*bs*	*Medford*	Δ Υ House
Davison, Russell Lee	*ab*	*No. Billerica*	Paige, 5
Dole, John Walter	*ab*	*Enfield, N. H.*	Δ Τ Δ House
Godfrey, Archiebald Joseph	*bs*	*Swampscott*	Σ Τ Δ House
Greenbaum, Arthur	*bs*	*Beachmont*	East, 30
Hall, Walton Shepard	*ab*	*Malden*	*23 Park St.*
Houston, Clarence Preston	*bs*	*Methuen*	West, 5
Kindred, James Ernest	*bs*	*Dorchester*	*107 Evans St.*
MacPherson, Edmund Stow	*bs*	*Maynard*	East, 29
Maulsby, Francis Ayer	*ab*	*Tufts College*	Ζ Ψ House
Porter, Frederick Wadsworth	*bs*	*Springfield*	Α Τ Ω House
Powers, Clarence Schlayer	*bs*	*Meriden, Conn.*	Θ Δ Χ House
Proctor, Percy Maynard	*bs*	*N. Cambridge*	Dean, 13
Savage, Harold Richardson	*bs*	*Medford*	*15 Lapham St.*
Tower, Henry Edward	*bs*	*Hudson*	Α Τ Ω House
Turner, Nelson Webster	*bs*	*Ayer*	Θ Δ Χ House
Whittemore, Francis Dyer	*bs*	*Everett*	West, 16½

Junior Class

Aldrich, Lloyd Edgar	*ab*	*Rutland, Vt.*	Dean, 10
Angell, George William	*bs*	*Syracuse, N. Y.*	Θ Δ Χ House
Barnes, Maxwell Fish	*bs*	*W. Somerville*	West, 1
Brooks, William Gooch	*bs*	*Dorchester Centre*	Δ Υ House
Burritt, Henry Way	*bs*	*Detroit, Mich.*	Α Τ Ω House
Chapman, Wilder Adams	*bs*	*Brighton*	*50 Brooksdale Rd.*
Hodges, Theodore Warren	*bs*	*Lynn*	Dean, 12
Jeffress, James Alfred	*bs*	*West Medford*	*37 Lincoln St.*
Kelley, Wilfred Frederick	*ab*	*Roxbury*	*1 Arcadia St.*
Levethan, Samuel Theodore	*bs*	*Manchester, N. H.*	22 N. Russell St., Boston
Lindstol, Carl Frederick	*bs*	*Beachmont*	East, 30
Magee, Joseph Vincent	*bs*	*Neponset*	*17 Port Norfolk St.*
Messer, Melvin John, Jr.	*bs*	*Somerville*	West, 27
Metcalf, Herbert Edmond	*bs*	*Winchester*	Ζ Ψ House
Morison, Frederick Stanley	*bs*	*W. Somerville*	West, 26
Morrison, Arthur Winchester	*ab*	*Medford*	West, 1
Phillips, Arthur Welch	*bs*	*Somerville*	Paige, 1

Prescott, Clarence Dean	*ab*	*Haverhill*	Σ T A House
Priest, Henry Benjamin	*ab*	*Irasburg, Vt.*	Z Ψ House
Richardson, William Blaine	*bs*	*Boston*	Δ T Δ House
Ricker, George Alvan	*bs*	*South Poland, Me.*	Θ Δ X House
Scott, Clinton Lee	*ab-bd*	*Tufts College*	Paige, 32
Sturtevant, Leon Josiah	*bs*	*Lexington*	Z Ψ House
Tonkonow, Benjamin	*ab*	*Meriden, Conn.*	East, 33
Waldron, Arthur Scott	*bs*	*West Somerville*	*135 Powder House Boulevard*
Ward, Benjamin Alpheus, Jr.,	*bs*	*W. Somerville*	*22 Milton St.*

Sophomore Class

Anderson, Carl Oscar	*ab*	*S. Manchester, Conn.*	East, 16
Allen, Windom Alpheus	*bs*	*W. Cummington*	A T Ω House
Bathrick, Orrin Freeborn	*bs*	*Tufts College*	*15 Emery St.*
Billingham, Arthur	*bs*	*Jamaica Plain*	Σ T A House
Crosby, Philip Barker	*bs*	*Methuen*	West, 22
Flagg, Frederick Potter	*bs*	*Waltham*	*20 Floyd St.*
Foster, Francis Joel	*ab*	*Danbury, Conn.*	East, 20
French, Herbert Moulton	*ab*	*Waltham*	East, 20
Gore, Edward Watson	*ab*	*W. Medford*	*45 Brooks St.*
Ingalls, Herbert Elliott	*bs*	*Lynn*	Dean, 11
Leahy, John Henry	*ab*	*Monson*	Σ T A House
Lee, Bernard James	*ab*	*Irasburg, Vt.*	Σ Ψ House
Lybeck, Robert Ferdinand	*bs*	*Everett*	East, 25
Marzynski, Philip	*bs*	*Dorchester*	*9 Leroy St.*
McJannet, Donald Ross	*bs*	*Medford*	*1 Curtis Place*
Nellis, Aubrey Irving	*bs*	*Roslindale*	West, 9
Phalen, Harold Otis	*bs*	*Arlington*	*8 Marathon St.*
Phillips, Ralph Oliver	*bs*	*Somerville*	Paige, 1
Proctor, Leonard Eldredge	*ab*	*Swampscott*	West, 20
Smith, John Blackmer	*bs*	*Williamstown, Vt.*	West, 16
Smith, Richard Ilsley	*bs*	*Auburn, Me.*	Dean, 9
Spencer, Clayton Cree	*bs*	*Barre, Vt.*	West, 16
Stafford, Henry Alexander	*bs*	*Orleans, Vt.*	East, 6
Staples, Carl Weston	*bs*	*Everett*	*17 Lexington St.*
Starkweather, Courtney Nash	*bs*	*Plainfield, N. J*	Δ T Δ House
Sullivan, Harry Matthew	*bs*	*Ayer*	West, 28
Swenson, Albert Walter	*ab*	*Medford*	*47 Newbern Ave.*
Tennis, Max	*bs*	*Boston*	West, 32
Town, Cecil Benton	*bs*	*Boston*	*94 Waltham St.*
Whitney, Donald Hay	*bs*	*W. Somerville*	East, 7
Wiggin, Sidney Cushing	*bs*	*Roxbury*	*9 Weld Ave.*

Freshman Class

Armstrong, Herbert Eustace	*bs*	*Cambridge*	*267 Windsor St.*
Barron, Ralph Avery	*bs*	*Wellesley Hills*	Dean, 10
Bratt, Albert Verner	*bs*	*Everett*	*12 Cedar St.*
Cameron, Daniel Clarence	*bs*	*Arlington*	*59 Mt. Vernon St.*
Carro, Leon Julius	*ab*	*Beachmont*	West, 23
Carvell, Chester Everett	*bs*	*Somerville*	*204 Medford St.*
Cate, Weston Atwood	*ab*	*Barre, Vt.*	West, 16
Cheever, Silas Ward Valentine	*bs*	*S. Lyndeboro, N. H.*	West, 30
Collins, George William	*bs*	*Medford*	*187 Middlesex Ave.*
Collins, Harold Edward	*bs*	*Haverhill*	East, 34
Coussoule, Loukas Nicholas	*ab*	*Sparta, Greece*	367 Columbus Ave., Boston
Cross, Julian Richard	*bs*	*Hingham Center*	West, 7
Curtin, Francis Gregory	*bs*	*Medford*	*93 Governor's Ave.*
Dadmun, Harrie Holland	*bs*	*Arlington*	*29 Harlow St.*
Davies, Roland Crocker	*ab*	*Tufts College*	*72 Professors Row*
Donnellan, Arthur Vincent	*bs*	*W. Medford*	*30 Lincoln St.*
Flett, James Watson	*bs*	*Waverley*	*596 Trapelo Rd.*
Fuller, George Lester	*ab*	*Braintree*	Dean, 12
Gately, Francis Paul	*bs*	*Waltham*	*9 Floyd St.*
Gates, Donald Smith	*ab*	*Cambridge*	*185 Hancock St.*
Golden, Benjamin Ira	*ab*	*Elkins, W. Va.*	Dean, 7
Goldman, Louis Everett	*ab*	*Gloucester*	West, 13
Harriman, Philip Lawrence	*ab*	*Lynn*	East, 31
Hayes, Arthur Douglas, Jr.	*bs*	*Waltham*	West, 25
Hayes, Elliot Wright	*bs*	*Winthrop*	West, 7
Hewitt, Earl Smith	*ab*	*So. Royalton, Vt.*	West, 9
Heys, George Harold	*bs*	*Lynn*	Dean, 2
Hill, Kenneth Rogers	*bs*	*Peabody*	West, 20
Hurley, Harold Francis	*bs*	*Malden*	*88 Hubbard St.*
Jenkinson, Egbert William Ashford	*bs*	*Brookline*	East, 19
Johnson, Horace Irving, Jr.	*ab*	*Waltham*	Dean, 11
Jones, Herman Wentworth	*bs*	*W. Somerville*	*20 Winslow Ave.*
Kilmer, Adelbert Libby	*bs*	*Brookline*	West, 23
Kraus, Benjamin Franklin	*bs*	*Jamaica Plain*	*16 Ophir St.*
Lamont, Arthur Lindley	*ab*	*W. Somerville*	*13 Conwell Ave.*
Lane, Franklin Johnson	*bs*	*Winchester*	*37 Glen Rd.*
Lipkin, Harold	*bs*	*Everett*	*817 Broadway*
MacIver, Clarence Roscoe	*bs*	*Graniteville, Vt.*	West, 19
Mandelstam, Felix	*ab*	*East Boston*	*132 Summer St.*
Marsh, Carl Alphonso	*bs*	*Maynard*	*16 McKinley St.*
McAdoo, Myron Holder Ward	*bs*	*Cambridge*	*278 Harvard St.*

Merrow, Oscar Earl	*bs*	*Salem*	West, 29
Mitchell, Walter Edward	*bs*	*Tufts College*	*28 Dearborn Rd.*
Morison, Norman Webster	*bs*	*West Somerville*	*58 Raymond Ave.*
Murphy, Leo Thomas	*bs*	*Somerville*	West, 22
Murphy, Maurice Francis	*ab*	*Mattapan*	*1019 Blue Hill Ave.*
Nelligan, Henry Philip	*bs*	*Cambridge*	*413 Washington St.*
Pasterczyk, Stanislaus Joseph	*ab*	*Salem*	*51 Congress St.*
Patterson, Richard	*ab*	*Morgantown, W. Va.*	Paige, 29
Penaligan, James Henry	*bs*	*Winchester*	*11 Maxwell Rd.*
Pratt, Kenneth Madison	*bs*	*Winchester*	*15 Wildwood St.*
Proctor, William Harrison	*bs*	*Jackson, N. H.*	East, 6
Robbins, Roger Sherman	*bs*	*E. Pepperell*	West, 3
Roche, Harold Francis	*bs*	*South Boston*	*34 F St.*
Rowe, Preston Brainard	*ab*	*Winchester*	*39 Myrtle Terrace*
Sample, Dirrell Daniel	*bs*	*Strong, Me.*	East, 4
Scott, Carroll Edward	*ab*	*W. Ossipee, N. H.*	East, 6
Sefton, Archibald Kyle	*bs*	*W. Medford*	*94 Boston Ave.*
Simon, Frank Joseph	*bs*	*Roxbury*	*246 Harold St.*
Spunt, William	*bs*	*Winthrop*	Dean, 7
Stewart, Robert Howard	*bs*	*Webster*	West, 25
Symmes, Leland Parker	*bs*	*Beverly*	East, 13
Symmes, Marshall Wyman	*bs*	*Winchester*	*251 Main St.*
Teele, Kenneth Robert	*bs*	*San Juan, P. R.*	West, 8
Torraca, Ralph Anthony	*bs*	*Danbury, Conn.*	East, 31
Watson, Barron Crowell	*bs*	*Bernard, Me.*	East, 8
Whitmore, James Russell	*bs*	*Mt. Morris, N. Y.*	West, 5
Whittemore, Charles Willard	*ab*	*Orange*	West, 15
Wilkins, Ross Franklin	*ab*	*Dorchester*	*103 Bloomfield St.*
Willey, Nathaniel Whelock	*ab*	*Saugus*	*71 Vine St.*
Williams, Palmer Champney	*ab*	*Taunton*	Dean, 1

Special Students

Currier, Paul Leslie III. *History and Economics*	*Everett*	East, 25
Blood, Leighton Harold I. *English*	*Cambridge*	West, 32
Mohor, Albert John I. *Chemistry*	*Dorchester*	*9 Howe St.*
Tuck, Ellery Frank I. *Language and Physics*	*Bangor*	East, 11

Unclassified Students

Eldridge, Clarence Crocker	*bs*	*Natick*	*39 Florence St.*
Loomis, Samuel	*bs*	*Bedford*	78 Bromfield Rd., W. Somerville
MacDonald, Leander Allan	*ab*	*Dorchester*	*793 Columbia Rd.*
Mark, George Archibald	*ab-bd*	*Glasglow, Scot.*	Paige, 15
Mark, John Nicol	*ab-bd*	*Glasgow, Scot.*	Paige, 18
Mark, Thomas Montgomery	*ab-bd*	*Glasgow, Scot.*	Paige, 15
Pollack, Israel Jacob	*bs*	*Boston*	*1 Revere St. Pl.*
Priestly, Bernard Gilbert	*bs*	*Somersworth, N. H.*	West, 30
Shapiro, Frank Simon	*bs*	*Boston*	*1 Allen St.*

One Year Pre-Medical Course

Ball, Leon Eugene	*S. Berwick, Me.*	21 Chetwynd Rd.
Costello, John Thomas	*Webster*	West, 28
Dlugg, Louis	*Berlin, N. H.*	West, 13
Dordoni, Arthur Peter	*Bridgton, Maine*	West, 18
Goldman, Harry	*Roxbury*	*113 Hampden St.*
Gosian, Moses	*Meriden, Conn.*	East, 33
Healey, John Henry	*South Boston*	*79 Baxter St.*
Jackson, Cornelius Walters	*Asbury Park, N. J.*	31 Jay St., Cambridge
Landry, Pierre Leonard	*Chicopee*	East, 5
McAlpine, Alfred Freeman	*Somerville*	*105 Washington St.*
Phipps, Walter Emerson	*Holliston*	*10 High St.*
Saphirstein, Hyman	*Boston*	*139 Chambers St.*
Shaw, Henry Jessup	*W. Bridgewater*	East, 3
Solomon, Samuel Alexander	*Dorchester*	*6 Lena Park*
Strammer, Myron Abner	*Roxbury*	*451 Walnut Ave.*
Sullivan, Russell Francis	*Melrose*	*19 Herbert St.*
Woolverton, Edgar Frank	*Woodstock, N. B.*	420 Massachusetts Ave., Boston

Supplementary List

(Students present during 1912–1913, but not appearing in the catalogue)

Cassidy, Franklin Chester	*sp*	*Medford*	*19 Washington St.*
Golden, Benjamin Ira	*ab*	*Elkins, W. Virginia*	West, 5
Ingalls, Herbert Elliott	*bs*	*Lynn*	Dean, 11
Whitmore, James Russell	*bs*	*Mt. Morris, N. Y.*	West, 5
Wilkins, Ross Franklin	*ab*	*Dorchester*	*103 Bloomfield St.*

Engineering School

Senior Class

Abbott, Porter Sheldon	*st e*	*Somerville*	Commons Club
Avery, Walter Roger	*st e*	*Somerville*	West, 31
Ayer, Perley Fay	*st e*	*Portland, Me.*	Θ Δ Χ House
Bennett, William Joseph	*ee*	*W. Medford*	*59 Grove St.*
Carlson, Carl Oscar	*ch e*	*Quincy*	Paige, 13
Eastman, Fred Cecil	*me*	*Swampscott*	Δ Τ Δ House
Faden, James Leatherbee	*ee*	*Waltham*	Δ Υ House
Ford, Frederick William, Jr.	*st e*	*Tufts College*	Α Τ Ω House
Foss, Clarence Wardwell	*ee*	*W. Lynn*	Δ Τ Δ House
French, Joseph Allen	*ee*	*Waltham*	Δ Υ House
Garabedian, Carl Arshag	*ch e*	*Dorchester Center*	Paige, 30
Gardella, John Louis	*ee*	*Brookline*	*115 Washington St.*
Geer, Everett Austin	*ee*	*Three Rivers*	Α Τ Ω House
Gurvin, John Edward	*ce*	*Somerville*	*604 Broadway*
Hayward, Alfred Webster	*st e*	*W. Somerville*	Δ Υ House
Henderson, William Davis	*ce*	*Tomkinsville, N. Y.*	Δ Υ House
Hill, Ralph Weston	*st e*	*Peabody*	Commons Club
Kearns, William Henry	*ce*	*Waverley*	*88 Beech St.*
Kelley, Walter Leonard	*ee*	*Arlington*	*30 Cleveland St.*
Kendall, Harrison Shattuck	*st e*	*Waverly*	*146 Mill St.*
Kett, Timothy Justin	*ce*	*Fair Haven, Vt.*	West, 24
Marshall, Edward Lester	*st e*	*Lynn*	Θ Χ Δ House
Mastrangelo, Michael Joseph	*st e*	*Chelsea*	East, 11
Miller, Everett Burton	*ee*	*Meriden, Conn.*	Ζ Ψ House
Monighan, Joseph Albert	*ce*	*Somerville*	*21 Prichard Ave.*
O'Meara, Francis	*ch e*	*Brighton*	*72 Mapleton St.*
O'Neill, Carroll Charles	*st e*	*Brookline*	West, 12
Perkins, Kaler Alfred	*ee*	*E. Saugus*	Σ Τ Α House
Power, Harold James	*ee*	*Everett*	Paige, 6
Prentiss, Joseph Adams	*ee*	*Belmont*	*206 Prospect St.*
Ramsay, Harold Southwood	*ee*	*Portland, Me.*	West, 31
Rice, Perley Augustus	*st e*	*W. Somerville*	Paige, 2
Risegari, George Ludovic	*ce*	*Tufts College*	*146 Curtis St.*
Rutter, Josiah Baldwin	*st e*	*Waltham*	Δ Υ House
Sanborn, Roy Conway	*me*	*Dorchester*	Commons Club
Sanerib, Jacob	*ce*	*Jamaica Plain*	*41 Paul Gore St.*
Shea, Thomas Arthur	*ch e*	*Stoneham*	*54 Pine St.*
Shiels, Joseph Daniel	*ch e*	*Jamaica Plain*	*55 Dunster Rd.*
Silverman, Max	*ce*	*Dorchester*	*26 Lawrence Park*
Stafford, Roland Grover	*st e*	*Attleboro*	Α Τ Ω House

Stewart, Arthur David	*me*	*Hopkinton*	Commons Club
Tegan, Michael Joseph, Jr.	*ce*	*Charlestown*	*23 Green St.*
Terhune, Howard Haven	*st e*	*Dorchester*	Commons Club

Junior Class

Abbott, Robert Leon	*ee*	*West Medford*	*108 Sharon St.*
Adams, John Harold	*ee*	*Passaic, N. J.*	Δ Υ House
d'Albergaria, José Soares	*ee*	*Azores Islands*	East, 12
Archibald, Harry Cameron	*st e*	*Everett*	*163 Hancock St.*
Armington, Ralph Loud	*ee*	*Everett*	*15 Hampshire St.*
Ball, Lester Whiting	*me*	*Somerville*	*15 Melvin St.*
Boothby, Everett James	*ch e*	*Somerville*	*95 Pearl St.*
Brown, James Lawrence, Jr.	*ce*	*Somerville*	East, 7
Comee, Edgar Randolph	*ce*	*Cliftondale*	Commons Club
Danver, Alan Thurston	*st e*	*Glenbrook, Conn.*	East, 15
Eastman, Arthur Gilman	*me*	*Townsend*	Σ Τ Α House
Eldredge, Earle Bertram	*st e*	*So. Harwich*	Σ Τ Α House
Ellis, Frederick Joseph	*me*	*Somerville*	West, 2
Fiske, Warren Munroe	*ee*	*Mexico City, Mex.*	Δ Τ Δ House
Fittz, Raymond Underwood	*ee*	*Natick*	East, 26
Fox, Erving Nelson	*ee*	*W. Somerville*	*123 College Ave.*
Grupe, Howard Edwin	*me*	*New Canaan, Conn.*	Ζ Ψ House
Harrington, Ralph Dudley	*ee*	*Somerville*	*26 Oak St.*
Harrison, James William	*ch e*	*East Walpole*	Commons Club
Hinchcliffe, Paul George	*ch e*	*Stoneham*	*8 East St.*
Horn, Albert Mathias	*st e*	*Roslindale*	Δ Τ Δ House
Hurley, William Joseph	*ce*	*Belmont*	*20 Cross St.*
Jackson, Henry Olin	*ce*	*Southbridge*	Δ Τ Δ House
Jameson, Charles Franklin	*ch e*	*W. Somerville*	*57 Lowden Ave.*
Maguire, James Bernard	*ch e*	*E. Boston*	*233 Saratoga St.*
Mendelsohn, Louis Edward	*me*	*Roxbury*	West, 27
Merrithew, Francis Marion Blaisdell	*ee*	*Saugus*	Α Τ Ω House
Moore, Charles Edward	*ee*	*Peabody*	Ζ Ψ House
Moses, Eliot Brewster	*ee*	*Waltham*	*Worcester Lane*
Neale, John Arthur	*ce*	*Cliftondale*	*15 Felton St.*
Newton, Raymond Willis	*st e*	*Dorchester*	Δ Τ Δ House
Nicoll, George Wesley	*st e*	*Boston*	Σ Τ Α House
Palumbo, Emilio Leonard	*ce*	*Boston*	Paige, 3
Pease, Maxfield	*me*	*Tufts College*	*205 College Ave.*
Rourke, Francis William	*ce*	*Concord, N. H.*	West, 2
Schlotterbeck, William Charles	*ce*	*Roxbury Station, Conn.*	Δ Υ House
Scrannage, Lawrence Emery	*me*	*Medford*	*83 Dudley St.*
Shorrock, John William	*ce*	*Dorchester*	*39 Longfellow St.*

Snow, Herbert Endicott	*me*	*Brooklyn, N. Y.*	Commons Club
Stanger, Herbert Theophilus	*me*	*Roslindale*	Dean, 9
Swan, Reuben	*ce*	*Dorchester Centre*	East, 15
Teel, Lawrence Howes	*me*	*Salem*	West, 3
Ulin, Benjamin	*ch e*	*Roxbury*	*37 Fort Ave.*
Wagner, Paul Barr	*ce*	*Brooklyn, N. Y.*	Δ Υ House
Walsh, Louis Joseph	*st e*	*Boston*	*19 Belvidere St.*
Webber, Lewis Gleason	*ee*	*Bedford*	Σ Τ Α House

Sophomore Class

Boss, John Harold	*Wellington*	*18 Fourth St.*
Coleman, Thomas Christopher, Jr.	*W. Somerville*	*29 Chandler St.*
Cross, Ralph Upton	*Worcester*	Δ Υ House
Dalton, George Alonzo	*Somerville*	West, 11
Dempsey, Nelson William	*Stoneham*	West, 11
Ellms, Carlton Warren	*S. Sudbury*	Δ Υ House
Fairbank, John William	*Cambridge*	Α Τ Ω House
Garde, Leslie Eames	*Lynn*	*155 Shepard St.*
Hadley, Harold Elliot	*Cambridge*	Dean, 3
Hall, Edward Franklin	*Lynn*	East, 18
Halpin, Henry Edward	*Somerville*	*59 Albion St.*
Hamilton, Harold Sylvestor	*Cliftondale*	East, 24
Holden, James Henry	*Roxbury*	East, 18
Hunt, Everett Currie	*Somerville*	*40 Franklin St.*
Jameson, Robert	*Everett*	*19 Oakes St.*
Katz, Henry Leon	*Malden*	West, 18
Keyes, William Arthur	*Lynn*	*177 Fayette St.*
Leary, John Joseph	*Newton*	*32 Channing St.*
Lee, Cedric Crandon	*Everett*	East, 23
Locke, Edwin Augustus	*Belmont*	*25 Somerset St.*
Lutz, William Edmund Aloysius	*Somerville*	*102 Prospect St.*
Mota, Joas Ignacio Silveira da	*S. Paulo, Brazil*	West, 21
Nixon, Alexander Clifford	*Brookline*	East, 21
Pennucci, Conrad	*East Boston*	*115 Neptune Ave.*
Poor, Joseph Victor	*Petersham*	West, 3
Powers, Clinton Russell	*Portland, Me.*	West, 4
Reed, Arthur Bryant	*Claremont, N. H.*	Δ Υ Aouse
Reed, Everett Lenox	*Somerville*	*100 Jaques St.*
Stowell, Edson Bancroft	*Jamaica Plain*	East, 22
Taylor, Raymond Clyde	*Arlington Heights*	East, 9
Towne, Lester Newton	*Andover*	East, 9
Upton, Charles Hastings	*Arlington Heights*	East, 24
Wilson, Earl Snow	*Hyannis*	East, 19

Freshman Class

Adelson, Louis	*Chelsea*	*14 Bloomingdale St.*
Anderson, Herbert Keith	*Milford, N. H.*	West, 21
Ayers, Charles Frank	*Everett*	*101 Chestnut St.*
Babbitt, George King	*Tufts College*	West, 6
Baldwin, Gilbert Edward	*Roxbury*	*245 Warren St.*
Bearse, Edwin Wilton	*Somerville*	*43 Cutter St.*
Berg, Carl	*Everett*	*34 Henry St.*
Bickford, Lawrence Wenzell	*Somerville*	*50 Vinal Ave.*
Borden, Karl Bigelow	*Collinsville, Conn.*	159 Appleton St., Arlington Heights
Brown, Horton	*Marblehead*	West, 29
Buckley, John Francis	*Arlington*	*28 Beacon St.*
Burbank, Colby Lewis	*Revere*	*101 Beach St.*
Carr, Philip Amory	*Lawrence*	*34 Dorchester St.*
Coddington, Philip Littlefield	*Tufts College*	Dean, 13
Connor, Bernard Dominic	*Somerville*	*16 Hathorn St.*
Copp, John Irving	*Cambridge*	*23 Inman St.*
Davis, Chester Thomas Caverly	*Wolfeboro, N. H.*	East, 4
Earle, Chester Reed	*Lawrence*	West, 15
Esten, Edwin Chandler	*Littleton*	15 Orchard St., Medford Hillside
Ferguson, David	*Methuen*	East, 5
Flinn, James Miller	*Winchester*	*10 Dix St.*
Foster, Eliot Chandler	*Medford*	*10 Manning St.*
Friis, Jan Trap	*Medford*	*235 Main St.*
Gabrielson, Samuel	*Lawrence*	*108 Park St.*
Gough, John Harold	*Dorchester*	*47 Larchmont St.*
Green, Richard Winthrop	*Winthrop*	*90 Highland Ave.*
Heileman, Calvin Marx	*Tufts College*	*3 Capen St.*
Herald, Charles Raymond	*Everett*	*27 Dean St.*
Holmgren, Viking Raymond	*E. Lynn*	184 Harvard St., Cambridge
Hull, Edward Knevals	*Jamaica Plain*	*294 Chestnut Ave.*
Knowles, Mahlon Gilman	*Swampscott*	West, 14
Leighton, Arthur Whiting	*Abington*	26 Gibbens St., Somerville
Leland, Harold Bickford	*Somerville*	*34 Irving St.*
Lewis, Robert Sherman	*Washington, D. C.*	East, 2
Little, Andrew Dodge	*Medford*	Α Τ Ω House
Macks, William Arthur	*Beverly*	Α Τ Ω House
McCarthy, John Joseph Jr,	*Somerville*	*220 Summer St.*
McCarthy, John Michael	*Natick*	East, 14
McLellan, Robert Leston	*Dorchester*	*10 Oakley St.*

Merritt, Warren Franklin	*Galveston, Tex.*	East, 28
Milliman, Frank Cooley	*Mattapan*	*7 Fottler Rd.*
Mishel, William Joseph	*Roxbury*	West, 10
Morse, Arthur Lewis	*Watertown*	*14 Hersom St.*
Mortenson, Ernest Dawson	*Bedford*	61 Glenwood Rd., Winter Hill
Nichols, Byron Franklin	*Methuen*	East, 5
Peck, Howard Bennett	*Bridgewater, Conn.*	East, 16
Perry, Emmanuel von Betzen	*Canal Zone, Panama*	95 Sagamore Ave., Winthrop Highlands
Porter, Arthur Bray	*Salem*	East, 13
Powers, John Joseph	*S. Groveland*	*8 Lanen Ave.*
Ransom, Lake Smith	*Longmont, Colo.*	29 Sawyer Ave.
Reed, Alfred Smith	*Roslindale*	Dean, 14
Segal, David	*Roxbury*	*46 Hampden St.*
Shepard, Eliot Blanchard	*Brookline*	Dean, 2
Spaulding, Paul Pickering	*Dorchester*	*380 Washington St.*
Sweet, Walter Prescott	*W. Somerville*	*97 Orchard St.*
Terhune, Edward Andrus Jr.	*Dorchester*	East, 27
Terry, Warren Franklin	*W. Somerville*	*108 College Ave.*
Turner, Robert Eaton	*Winthrop*	*14 Seymour St.*
Voss, William Charles	*Hartford, Conn.*	West, 10
Waters, Mendal	*Roxbury*	*1036 Harrison Ave.*
Webb, Richard Bruce	*Washington, D. C.*	East, 23

Unclassified Students

Atkins, Arthur Randolph	*Roslindale*	*14 Ardale St.*
Brett, Roy Cuming	*S. Braintree*	Paige, 22
MacDonald, Norman Duncan	*Melrose*	*58 Howard St.*
Waite, Clayton Byron	*Fort Ann, N. Y.*	Paige, 22

Bromfield-Pearson School

Bingham, Leslie Frederic	*Cambridge*	*454 Green St.*
Bowen, Harold Vincent	*Providence, R. I.*	West, 4
Clarke, William John	*Boston*	*11 Grenville Pl.*
Ela, Robert Blazo	*Cambridge*	*421 Green St.*
Gifford, Eliot Wing	*New Bedford*	West, 8
Paul, Frederick Henry Jr.	*Waltham*	Δ Τ Δ House
Porter, Leo Augustus	*Stoughton*	East, 28
Stanton, Charles Ingram	*Revere*	*170 Reservoir Ave.*
Tentler, Lewis Aaron	*Dorchester*	*1073 Dorchester Ave.*
Wahlen, Frank Gustave	*Montpelier, Vt.*	East, 11

Supplementary List

(Student present during 1912–1913, but not appearing in the catalogue)

Bathrick Orren Freeborn	*Tufts College*	*15 Emery St.*
Bickford, Lawrence Wenzell	*Somerville*	*50 Vinal Ave.*
Gardner, Herbert Whiting	*W. Medford*	*77 Warren St.*
Gough, John Harold	*Dorchester*	*47 Larchmont St.*

Theological School

SIX-YEAR COURSE

Fifth Year

Scott, Clinton Lee	*Newport, Vt.*	Paige, 32

Third Year

Bisbee, Eleanor	*Arlington Heights*	Richardson, 2

Second Year

Ryan, Frederick Lynne	*Denair, Calif.*	Paige, 31

FIVE-YEAR COURSE

Fifth Year

Wilson, Arthur Elwin	*Tufts College*	*34 Emery St.*

Third Year

Orito, Joseph Chusaku	*Hokkaido, Japan*	Paige, 13

First Year

Colcord, Elmer Danforth	*Canton*	Paige, 36
Whippen, Elbert Wilder	*Kingston, N. H.*	Paige, 20

Unclassified Students

Mark, George Archibald	*ab-bd*	*Glasgow, Scotland*	Paige, 15
Mark, John Nicol	*ab-bd*	*Glasgow, Scotland*	Paige, 17
Mark, Thomas Montgomery	*ab-bd*	*Glasgow, Scotland*	Paige, 16

Non-Resident Student

Bisbee, John Bancroft *Arlington Heights*
Resident worker, for the year, Grenfell Mission, Labarador

Jackson College

Senior Class

Buck, Margaret	*ab*	*Lexington*	*20 Forest St.*
Cameron, Isabella	*ab*	*Arlington*	*59 Mt. Vernon St.*
Cobb, Gladys Lydia	*ab*	*Mansfield*	Start, 5
Cochran, Edith Elizabeth	*ab*	*Bath, Me.*	Metcalf, A
Dyer, Gertrude Weston	*ab*	*Provincetown*	Metcalf, 4
Eveleth, Emily	*ab*	*Little Falls, N. Y.*	Start, 4
Fallis, Ethel Hazel	*bs*	*W. Somerville*	*43 Hall Ave.*
Hearsey, Helen Elizabeth	*ab*	*Gleasondale*	Metcalf, 4
Hooper, Anne Leslie	*ab*	*Tufts College*	124 Professors Row
Hulen, Emma	*bs*	*Cliftondale*	Richardson, 1
Kagan, Frances	*ab*	*Roxbury*	*39 Stanwood St.*
MacKnight, Annette Bassford	*ab*	*New York, N.Y.*	Metcalf, B
Macy, Ella Hazel	*ab*	*Winter Hill*	*3 Miner St.*
Roberts, Marjorie	*ab*	*Reading*	Metcalf, 9
Scamman, Eleanor Margaret	*ab*	*Lexington*	Metcalf, 8

Junior Class

Bisbee, Eleanor	*ab-bd*	*Arlington Heights*	Richardson, 2
Cate, Esther Safford	*ab*	*Barre, Vt.*	Richardson, 6
Cavanaugh, Mary Eleonor	*bs*	*W. Lynn*	Start, 6
Cragin, Bernice Willette	*ab*	*Worcester*	Start, 2
Davis, Marion Hill	*ab*	*Somerville*	Metcalf, B
Fessenden, Margaret Tebbetts	*bs*	*Ashfield*	Metcalf, 1
Greenwood, Rena Mae	*bs*	*Medford*	Metcalf, 2
Hea, Margaret Hildred	*ab*	*Medford*	*85 Summer St.*
Hooper, Gertrude Mellen	*ab*	*Tufts College*	*124 Professors Row*
Houghton, Dorothy Taylor	*ab*	*No. Andover*	Start, 4
Keith, Gladys Ethlya	*ab*	*Tufts College*	*93 Capen St.*
Moyer, Pauline	*bs*	*Hartford, Conn.*	Metcalf, 3
Nichols, Marian Bill	*ab*	*Hathorne*	Richardson, 4
Peabody, Ethel Lorinda	*ab*	*W. Somerville*	*80 Wallace St.*
Pulsifer, Alice Cook	*ab*	*Campton, N. H.*	Metcalf, C
Shepard, Aurilla Myrtle	*ab*	*Mansfield*	Richardson, 1
Siebert, Margaret	*ab*	*Hyde Park*	Richardson, 3
Welch, Alice Ruth	*ab*	*Bethel, Vt.*	66 Rogers Ave., West Somerville

Sophomore Class

Bixby, Madeleine	*bs*	*North Andover*	Start, 3
Burbank, Ruth	*ab*	*Lynn*	Start, 1
Chipman, Lucille Horton	*ab*	*Provincetown*	Metcalf, 11

Cotton, Alice Mae	*ab*	*Arlington*	*1054 Massachusetts Ave.*
Cragin, Margaret	*ab*	*West Somerville*	*48 Meacham Rd.*
Frizzell, Ethel May	*ab*	*Woburn*	*20 Garfield Ave.*
Gardner, Mary Violetta	*ab*	*New Bedford*	Metcalf, 10
Hagerty, Aileen Alberta	*ab*	*Woburn*	*66 Arlington Rd.*
Hall, Marion	*ab*	*Salem Depot, N. H.*	Metcalf, 15
Harrington, Isabel	*ab*	*Medford*	*259 Spring St.*
Hart, Dorothy	*ab*	*Medford*	*57 Logan Ave.*
Keir, Avis Jeannette	*ab*	*Craftsbury, Vt.*	Richardson, 5
Knight, Anna Chatfield	*ab*	*Melrose Highlands*	Metcalf, 3
Matheson, Mabel Knowles	*ab*	*Provincetown*	Metcalf, 11
Noyes, Christine Blanche	*ab*	*Lexington*	*5 Tewkesbury St.*
Osborn, Emilie Poor	*bs*	*Peabody*	Metcalf, 7
Piper, Lydia Josephine	*ab*	*S. Biddeford, Me.*	Start, 7
Wallis, Freda	*ab*	*North Beverly*	*18 Enon St.*
Whitehouse, Ruth Lida	*ab*	*Somerville*	*32 Central Rd.*
Wood, Bernice Ethel	*bs*	*Charlestown*	*72 High St.*

Freshman Class

Cochran, Margaret	*bs*	*Medford*	*34 Hancock St.*
Cogswell, Almena	*ab*	*Winchester*	*599 Main St.*
Cutler, Dorothy Bascom	*ab*	*East Jaffrey N. H.*	Richardson, 6
Dacey, Mildred Anna	*bs*	*Lexington*	*18 Muzzey St.*
Dailey, Mary Elizabeth	*bs*	*Lexington*	Metcalf 16
Dean, Marjorie Grace	*bs*	*Winthrop*	*125 Cliff Ave.*
Dole, Mary Clementine	*ab*	*Enfield, N. H.*	Richardson, 5
Duffey, Pauline	*ab*	*Medford*	*67 Dudley St.*
Emerson, Mildred	*ab*	*Lowell*	Start, 1
Hardy, Helen Katherine	*ab*	*Andover*	42 Elm St., Wakefield
Higgins, Helen Beatrice	*ab*	*Andover*	Metcalf, 13
Huntington, Adeline Parmelee	*ab*	*Lynn*	Start, 7
Jameson, Helen Marion	*ab*	*Brookline*	Metcalf, 6
Jeffers, Madeline	*bs*	*Chelsea*	Metcalf, 7
Mansfield, Nellie Birkenhead	*ab*	*Everett*	*73 Baldwin Ave.*
Moody, Beulah Borden	*ab*	*Chelsea*	*76 Grove St.*
Morse, Dorris Brownell	*ab*	*S. Easton*	Metcalf, 15
Parshley, Esther	*ab*	*Winchester*	*6 Warren St.*
Pease, Dorothy	*ab*	*Tufts College*	*205 College Ave.*
Raymenton, Marion Ward	*ab*	*Springfield, Vt.*	28 Professors Row
Rowe, Helen Almira	*ab*	*Winchester*	*20 Vine St.*
Sarason, Lillian	*ab*	*New Haven, Conn.*	Metcalf, 13
Schofield, Jeannette Irene	*ab*	*Forest Hills*	Richardson, 3
Seavey, Ruth Eliza	*bs*	*Tufts College*	*217 College Ave.*

Simpson, Mildred Brooks	*bs*	*Winthrop*	Metcalf, 14
Trott, Marian Everson	*ab*	*Winchester*	*53 Cutting St.*
Wheet, Geneva Alice	*ab*	*Bristol, N. H.*	Metcalf, 14
Whitcomb, Florence Sprague	*ab*	*Littleton*	Richardson, 4
Woodman, Winifred Katharine	*ab*	*W: Medway*	Metcalf, 12
Young, Priscilla Bertha	*ab*	*Exeter, N. H.*	Metcalf, 6

Special Students

Holden, Kathryn *B.S.* (Simmons) I. *Chemistry*	*Roxbury*	Metcalf, C
Wardwell, Ruth Stuart I. *German*	*Medford*	*23 College Ave.*

Unclassified Students

Bissell, Mary Elizabeth	*ab*	*Meriden, Conn.*	Metcalf, 13
Dubuc, Agnes Térèsa	*aa*	*Dorchester*	*12 Fenelon St.*
Fisher, Beatrice Birrell	*ab*	*Newburyport*	Richardson, 10

One Year Pre-Medical Course

Neill, Roberta Estella	*Holyoke*	97 Talbot Ave.

Supplementary List

(Students present during 1921–1913, but not appearing in the catalogue

Dacey, Mildred Anna	*bs*	*Lexington*	*18 Muzzey St.*
Jeffers, Madeline	*bs*	*Chelsea*	Metcalf, 7
Pote, Marguerite Hanna	*ab*	*Medford*	*9 Marshall*
Wardwell, Ruth Stuart	*sp*	*Medford*	*23 College Ave.*

Medical School

[P. O. Address, 416 Huntington Ave., Boston, Mass.]

Fourth Year

Allison, Carl Edwin	*Wakefield*
Anderson, William Laurence	*New Haven, Conn.*
Andrews, Benjamin Franklin	*Worcester*
Atwood, Blanche Louise	*Whitman*
Barron, Maurice Edward	*Cambridge*
Baxter, Clarence Pennell	*Topsfield*
Berlin, Maurice George	*Dorchester*
Berman, Myer Isadore	*Boston*
Brunick, Patrick Vincent	*S. Boston*
Caines, Richard John Ridgway	*Boston*
Carpenter, Robert John	*Winchester*
Clapp, Roger Irving (D.M.D.)	*Dorchester*
Clow, Henry Leon	*East Wolfeboro, N. H.*
Cohen, Milton Michael	*Boston*
Cosby, Edwin Gordon	*Derby Line, Vt.*
Cox, Oscar Francis, Jr.	*N. Weymouth*
Davis, Henry Levi	*Lynn*
Elkin, Samuel Nathaniel	*Roxbury*
Erlenbach, James Hill	*Dorchester*
Finkelstein, Isadore Albert	*Lynn*
Freeman, Benjamin Lawrence	*Brockton*
Gallant, Alfred Edward	*Waltham*
Goldberg, Morris	*Chelsea*
Gooding, John Harold	*Somerville*
Gunter, Fred Clarke	*Somerville*
Harney, Robert Edwin	*Boston*
Heywood, Nathaniel Jewett	*Westboro*
Hynes, Fred Henry	*Boston*
Johnson, Herbert Lester Charles	*Brookline*
Jones, Guy Walter Stanley	*Waltham*
Jones, Thomas Paul	*Roxbury*
Keenan, James Alphonsus	*Lynn*
Killam Franklin Harrison	*Somerville*
King, Drue	*Augusta, Ga.*
Klein, George	*Roxbury*
La Liberte, Elie Joseph	*Spencer*

LeClair, Hormidas Homer	*Fall River*
Levine, Harry Benjamin	*Roxbury*
Logiodice, Leonard Francis	*West Haven, Conn.*
MacGray, Charles Leverne	*Melbourne, N. S.*
MacIntyre, William Angus	*West Roxbury*
MacKay, William Henry	*Waltham*
Macomber, Clarence Alden	*Pittsfield, Me.*
Mann, David Edwin	*Norfolk*
Margolis, Barney Joseph	*New Bedford*
Martin, William Richard	*Spencer*
McCabe, John Edward	*North Attleboro*
McCormick, William Aloysius	*Fall River*
McIntosh, Jennie Grace	*Winchendon*
Meyers, Hyman Bernard	*Chelsea*
Murphy, Joseph William Patrick	*Salem*
O'Brien, John Charles, Jr.	*Greenfield*
O'Brien, Thomas Joseph	*Westboro*
Osborn, Stanley Hart	*Peabody*
Paglia, Jeremiah James	*Boston*
Potter, Edgar Sayles	*Chepachet, R. I.*
Rapoport, Boris	*Dorchester*
Raymond, Albert Orville	*Brockton*
Record, Harold Roland	*Avon*
Regan, William Francis	*Chelsea*
Robins, Samuel Alexander	*Roxbury*
Rodriguez, Enrique	*Barranquilla, Colombia, S.A.*
Rogers, John Andrews	*Nashua, N. H.*
Romeu de, Martha Robert	*Mayaguez, P. R.*
Scanlon, Joseph Michael	*Lawrence*
Silver, Louis Serebriany	*Boston*
Simonds, Frederick Artemas	*Wakefield*
Smith, Edwin Eugene	*Boston*
Smith, William Francis	*Malden*
Starr, Lucy Margaret	*Dorchester*
Sullivan, Elizabeth Ann	*Winchendon*
Thomas, Everett Onslow	*St. Stephen, N. B.*
Wadden, Joseph Mathew	*Cambridge*
Walsh, Patrick Henry	*Fall River*
Wheatley, Frank Edward	*N. Abington*
Woodward, LeRoy Albert Ph.G. (R. I. Coll. Ph.)	*Pawtucket, R. I.*

Third Year

Adams, Winthrop	*Cambridge*
Angier, Harlan Wesley	*Oakham*
Armstrong, Charles Medville	*Calais, Me.*
Bearse, Carl	*Boston*
Beaudet, Elphege Alcime, B.S. (Laval)	*Newmarket, N. H.*
Birdsall, Clarence Harlow	*Lawrence*
Burns, John Edward	*Natick*
Butler, Alice Etta	*Stoneham*
Butler, David Mathew	*Brockton*
Campbell, Malcolm Samuel	*Malvern, Iowa*
Cunningham, Richard Augustine	*Lynn*
Dunn, Joseph Henry	*Rockland*
Dutton, Frank Kingsley	*Westerly, R. I.*
Elkind, Henry Byron	*Worcester*
Fobes, Howard Edward	*Whitman*
Fregeau, Aime Napoleon	*Fall River*
Ghazarian Garabed Sarkis A.B. Central Turkey College	*Aintab, Turkey in Asia*
Granata, Tancredi Giovanni	*Providence, R. I.*
Green, Archibald Forest, D.V.S. (N. Y. Univ.)	*Rockland, Me.*
Green, Harold Russell	*Somerville*
Guralnick, Rubin	*East Boston*
Hart, Francis Denbroeder	*Bridgewater*
Hart, Louis Park	*Marlboro*
Hodgkins, Edward Marshall	*Dorchester*
Jennings, John Greenwood	*Wellesley Hills*
Jewett, Everett Porter	*Gardner*
Kaitz, Harry	*Boston*
Kane, William Vincent	*Lynn*
Kempton, Whitman Tupper	*Newton Upper Falls*
Koplin, Harry	*Windsor Locks, Conn.*
Leith, Richard Bliss	*Greenfield*
Lynch, Joseph Michael	*Dorchester*
Mahoney, John Francis	*New Bedford*
Margeson, Reginold Dimock	*Westwood*
McClintock, Elsie	*Chelsea*
McDonald, Harry Leo	*Attleboro*
Mernin, Mary Towler	*Cambridge*
Muldoon, Agnes Catharine	*Somerville*
Murphy, Harold Alphonsus	*St. John, N. B.*
Papavasiliou, Vasilios Konstantinos	*Natick*
Persky, Myer Arthur	*Malden*

Quirk, Thomas Christopher	*Watertown*
Rafferty, Thomas Bernard	*Lynn*
Roderick, Anthony Joseph	*New Bedford*
Salerno, Louis Francis	*East Boston*
Sandler, Frank Fishel	*Revere*
Schwartz, George Harvey	*East Boston*
Shinn, Philip Allen	*Boston*
Silverman, Max	*Brockton*
Sypher, Edna Newell	*South Braintree*
Whitcomb, Clarence Adelbert	*Malden*
Whitney, Leroy Danforth Ph.C. (R. I. Coll. Ph.)	*Boston*
Wright, Willard Lyman	*Keene, N. H.*

Second Year

Alley, Leon Arthur	*Brockton*
Anderson, Arthur Forest	*Westerly, R. I.*
Applebaum, Jacob	*Dorchester*
Aronson, Charles	*Salem*
Battershall, Jesse Wolfenden	*Attleboro*
Berr, Alfred William	*Rockville, Conn.*
Brannick, Catherine Elizabeth	*Somerville*
Brown, Roy Farrington	*Provincetown*
Cauley, John Henry Jr.	*Dorchester*
Chalfen, Samuel	*Cambridge*
Clark, William Francis	*Peabody*
Cohen, Leo	*Providence, R. I.*
Cohen, Samuel Adams	*Roxbury*
Condrick, James Francis	*Weymouth*
Connor, Hillary Joseph	*Woodstock, N. B.*
Cotting, William Frederick	*Medford*
Dalton, Stephen James	*Marlboro*
Di Mento, Vincent James	*Boston*
Duff, John Jr.	*Charlestown*
DuVally, Nicholas	*Fall River*
Easter, Edna Frances	*Arlington*
Fiege, Herbert Reynold	*Cambridge*
Gaetani, Arthur Leonard	*Dorchester*
Genge, Victor Patrick	*St. Johnsbury, Vt.*
Ginn, Robert Leicester	*West Somerville*
Goldman, Edward	*Boston*
Grant, Winifred Margaret	*Boston*
Greenburg, Minnie Edna	*Douglas, Arizona*

Hale, Frank Smith	*Providence, R. I.*
Hardy, Wilbert Clark	*Haverhill*
Harriman, Frank Edwin	*North Adams*
Hekimian, Yakoub Hagop	*Boston*
Herlihy, David Joseph	*Cambridge*
Hopner, Sadie	*Lowell*
Hurley, William Cyril Rowe	*East Boston*
Kandib, Annie Hilda	*Dorchester*
Kelleher, Simon Bartholomew	*Cambridge*
Laliberte, Edmund Joseph	*Spencer*
Liberti, Angelo	*East Boston*
Lynch, Charles Leo	*Roxbury*
MacPhee, Lillian Lee	*Somerville*
McCarthy, Charles Daniel Jr.	*Malden*
Meledy, Joseph Aloysius	*Providence, R. I.*
Melkonian, Eliza Armenoohy	*Arabker, Turkey*
Meredith, Bessie Florence Lyndon	*Dorchester*
Mileau, Alexander, Jr.	*Lewiston, Me.*
Muldoon, Mary Theresa	*Somerville*
O'Connor, William Henry	*Dorchester*
Papen, George William	*Roxbury*
Park, Esther Marguerite	*Winchester*
Perry, Walter Leslie	*Medford*
Powers, Harris Earle	*Manchester, N. H.*
Pratt, Emily Adelaide	*Roxbury*
Quinn, John Joseph James	*Revere*
Rice, George Arnold	*Worcester*
Rudman, Israel Ellis	*Bangor, Me.*
Schaefer, Jacob	*New Britain, Conn.*
Scott, David Miller, A.B. (Lincoln University)	*Augusta, Ga.*
Simmons, Hugh Ludwig	*Morrill, Me.*
Skirball, Joseph Jacob	*Beachmont*
Smith, Percival Lathrop	*Greenwood*
Sullivan, Daniel Joseph A.B. (Mt. St. Josephs Coll.)	*Manchester, N. H.*
Sullivan, Frank Cornelius	*Lawrence*
Sullivan, Robert Thomas	*Greenfield*
Sundelöf, Ester Matilda Eleonora	*Roxbury*
Sweeney, John Gerard	*Nantasket*
Tierney, Edward James	*Holyoke*
Tripp, John Henry	*Boston*
Wood, William Baxter	*Revere*
Woodside, John Nelson	*Cambridge*
Zarrella, Angelo Mario	*East Boston*

First Year

Adams, Edward Augustus	*Fitchburg*
Ash, Richard Maurice	*W. Quincy*
Atkinson, Frederick Charles	*Methuen*
Banquer, Jacob	*Roxbury*
Barry, Thomas Matthew	*Lynn*
Bennett, Ernest Floyd	*Ansonia, Conn.*
Blanchard, Harold Bradford	*Uxbridge*
Bolotow, Nathan Abraham	*Lonsdale, R. I.*
Bridgwood, David	*Brockton*
Brown, Abe Arthur	*Lawrence*
Brown, Henry Seabury	*Providence, R. I.*
Budreski, Alphonse Frank	*Brockton*
Caruso, Septimio	*Roslindale*
Casey, Chester Arthur	*Ironton, Ohio*
Churchill, Anna Quincy	*Dorchester*
Clark, Millard Cressey	*Bethlehem, N. H.*
Cohen, Newman	*Everett*
Corea, George Thomas	*Provincetown*
Crimmin, Leo Philip	*Brockton*
Cunha, Manuel Felix	*Somerville*
Currie, Inez Margaret	*Needham*
Decker, Frederick Graham	*Rensselaer, N. Y.*
Delaney, William Joseph	*Marlboro*
Dennett, Paul Carroll	*Portsmouth, N. H.*
Dine, Harold Irwin	*Dorchester*
Doherty, Gerald Leo	*Dorchester*
Doucet, Charles Stanislaus	*Manchester, N. H.*
Duffy, Edward Anthony	*Worcester*
Fowler, Alma Evelyn	*Whitman*
French, Leland Malcom	*Worcester*
Friederman, Elie Louis	*Boston*
Gallagher, Henry Joseph	*Providence, R. I.*
Ganley, Edward Henry	*Methuen*
Gately, Lynde	*Melrose*
Genge, Val Francis	*St. Johnsbury, Vt.*
Glichouse, Abraham	*Peabody*
Goddard, Fred Chambers	*Dover, N. H.*
Gordon, Louis	*Boston*
Greenwood, Wilbourt Edward	*Arlington, R. I.*
Gurjian, Leon Kevork	*Harpout, Turkey in Asia*
Hamburg, Miles Myer	*Everett*
Hanlon, Morgan Patrick	*Cambridge*

Haskins, Abraham	*Boston*
Heffernan, Roy Joseph	*Somerville*
Higgins, Clarence Bertrand	*Boston*
Hoey, Edward Charles	*Natick*
Hoffman, Morris	*Boston*
Holmes, Perley Eugene	*Boston*
Hooper, Anne Leslie	*Tufts College*
Hopkins, Lawrence Towle	*Somerville*
Howard, James Augustine	*N. Brookfield*
Howard, Rhoda Letitia	*Troy, N. Y.*
Iordanides, Georgeos	*Sivas, Turkey*
Johnson, Lewis Wells	*Greenfield*
Joslin, Royal Knight	*Worcester*
Kable, Josephine Downie	*Williamsport, Pa.*
Kaufman, Morris Frank	*Boston*
Keefe, Francis Joseph	*Brockton*
Kiley, Cornelius Joseph	*Peabody*
Kirby, James Caleb	*Salem*
Krepps, Raymond Miles	*Waynesboro, Penn.*
Lanois, Esdras Joseph	*Northborough*
Larson, Walfred Isador	*Hartford, Conn.*
Lipchitz, Charles Saul	*New Bedford*
Loewe, Walter Ralph	*Dorchester*
Long, Rufus Wilfred	*Manchester*
Loughlin, Patrick Edmond	*Wakefield*
Lynch, Francis John	*Holyoke*
Macmillan, Alexander Stewart	*Boston*
McDewell, Henry Estey	*Brookline*
McGauley, Walter Gardner, D.D.S.	*Worcester*
McKay, Hugh Gordon	*Howland, Me.*
McKinnon, Donald Cuyler	*Lowell*
Medalia, David Bernard	*Dorchester*
Merritt, Edward Lester	*Fall River*
Merritt, Robert Elmer	*North Yakima, Wash.*
Mills, Parker	*Lynn*
Murphy, James Moore	*Norwich, Conn.*
Narekian, Nishan Krikor	*Boston*
Nichols, Guy Edward	*Wilmington*
O'Brien, Frederick William	*Arlington*
O'Connell, John Gabriel	*Bridgeport, Conn.*
O'Neill, Elizabeth Veronica	*Mattapan*
Pettengill, Warren Martin	*Haverhill*
Polakewich, Isaac	*Biddeford, Me.*

Primrose, Rodney Bertram	*Groveland*
Rattey, Arthur Andrew	*Lawrence*
Remick, Nelson Atwood	*Reading*
Ring, Arthur Joseph	*Lynn*
Rosen, Kermit Charles	*Dorchester*
Rosenkovitz, Edward	*E. Boston*
Rowley, Philip William	*Gloucester*
Rudman, Benjamin William	*Portland, Me.*
Ruisi, John Edward	*Westerly, R. I.*
Rumrill, Samuel Irving	*Malden*
Salmon, Charles Augustus	*Worcester*
Segal, Samuel	*Haverhill*
Shaw, John	*Lawrence*
Shaw, Walter Earle	*E. Boston*
Simons, Sigmund	*Pawtucket, R. I.*
Smith, Lillian Richardson	*Cambridge*
Solomon, Sidney	*Revere*
Slater, Robert	*Boston*
Story, Theodore LeRoy	*Hartford, Conn.*
Struthers, Halbert Kinnie	*Upton*
Ullian, Louis Joseph	*Boston*
Vigneault, Wilfred Urbain	*Haverhill*
Ward, John Clement	*Marlboro*
Warner, Helen Thompson	*Seymour, Conn.*
Willey, Walter Brown, Jr.	*Bangor, Me.*
Wyman, Thomas Clark	*Portland, Me.*
Zonn, Seymour Israel	*Malden*

Dental School

[P. O. Address, 416 Huntington Ave., Boston, Mass.]

Third Year

Beckman, Roger Parker	*Gloucester*
Bergan, William Michael	*Hingham*
Bernstein, Barnett	*Lowell*
Bonnell, Percival Lincoln	*St. John, N. B.*
Brass, Arthur Jake	*Roxbury*
Brown, Harold Walter	*Lynn*
Burke, Samuel Joseph	*Providence, R. I.*
Canarie, Martin Charles	*Haverhill*
Carroll, John Leo	*Canton*
Clifton, Joseph Howarth	*Fall River*
Danforth, Harold Eugene	*Madison, Me.*
Desmond, Joseph Michael	*Cambridge*
Everson, Leon Walter	*Bryantville*
Fisher, Ernest Morton	*Somerville*
Fitzpatrick, Edward Ambrose	*Medford*
Gallagher, James Bernard	*Rockland*
Ginns, Max	*Worcester*
Griffin, Ralph Henry	*So. Portland, Me.*
Gussman, Hayward William	*Alna, Me.*
Herlihy, John Edward	*Fitchburg*
Johnson, Guy Lloyd	*Boston*
Kelley, Joseph Michael	*Watertown*
Kingsley, Victor Joseph	*Kingston, Ontario*
Lan, Maurice	*Worcester*
Laurie, John Warren	*Somerville*
Lavien, Leo Himan	*Worcester*
Lewis, Minott White	*W. Somerville*
Looney, Michael Francis	*Lawrence*
MacPherson, William Alexander	*Clarktown, P. E. I.*
Maker, Samuel	*Fall River*
Manning, Joseph Aloysius (A.B. Boston Coll.)	*Roxbury*
Mayo, Harold William	*Winthrop*
McGann, Philip Sheridan	*Somerville*
McGrath, James Francis	*Brookline*
McKinnon, Fredeic William Thomas	*Dorchester*
Mitchell, Marks	*Brockton*

Murphy, William Lawrence	*Dover, N. H.*
O'Neil, William Thomas, Jr.	*Amesbury*
Pearlin, Harry John	*Malden*
Perman, John Gabriel	*Worcester*
Peterson, Edwin William	*Rockport*
Pierce, Helen Chic	*New Bedford*
Plummer, Gordon Leslie	*Cambridge*
Ray, Harry Eugene	*Greenville, Me.*
Rich, Robert Raymond	*Maynard*
Roberts, Henry	*New Bedford*
Rooney, James Henry	*Lowell*
Ross, David Hecter	*Boston*
Rowlandson, Janet Mary	*Lowell*
Sanderson, Melville Alexander	*Waltham*
Scher, Emmanuel	*Roxbury*
Sibley, Henry Robert	*Bradford*
Stahl, Herrmann Hanson	*Chelsea*
Staples, Lawrence Milton	*Newington, N. H.*
Sullivan, Joseph Edward	*Melrose*
Sullivan, Joseph William	*Cranston, R. I.*
Tartre, Joseph Armand	*Biddeford, Me.*
Weene, Frederic Isidor	*East Somerville*
Wight, Clarence	*Belfast, Me*
Williams, Floyd Elbert	*Manchester, N. H.*
Yale, Henry Isadore	*Salem*

Second Year

Bachelder, Eugene Earle	*Gardiner, Me.*
Barton, Earle Stanley	*Houlton, Me.*
Berg, Bernard	*Dorchester*
Berry, Charles William	*South Portland, Me.*
Brown, Chester Kilburn	*Roslindale*
Brown, Mark Mendell	*Dorchester*
Clancy Frederic David	*Holliston*
Cohan, Bernard Israel	*Fitchburg*
Cohen, Joseph Harry	*Haverhill*
Collins, Arthur Eugene	*Everett*
Colony, Loris	*Brookline*
Courtney, Charles Shephen	*Manchaug*
Curtin, Timothy James	*Norwood*
Doron, Davis Bedell	*Bangor, Me.*
Duffy, Philip Arthur	*Riverpoint, R. I.*
Dumont, Roland Sijefroy	*Amesbury*

Easton, Arthur Witham	*Bridgton, Me.*
Epstein, Nathaniel	*Woonsocket, R. I.*
Ewing, Arthur Wellington	*South Framingham*
Farrell, John Benedict	*Revere*
Farren, Bernard Neil	*Turners Falls*
Ferreira, Theophylo	*Fayal, Azores*
Ferrin, Joseph Leo	*Lawrence*
Fine, Victor	*Boston*
Finnegan, Frederick Leo	*Saranac Lake, N. Y.*
Forsyth, Truman Oscar	*Brighton*
Foss, Roy Tibbetts	*Exeter, N. H.*
Freundlich, Harry	*Boston*
Gallagher, Justin Peter	*Moncton, N. B.*
Gaw, George Joseph	*Auburndale*
Gerson, Samuel	*Chelsea*
Gibbons, Martin Francis	*Clinton*
Ginn, David Clifton	*West Somerville*
Godfrey, Cranston Franklin Jr.	*Hingham*
Goldberg, George	*Boston*
Greene, Thomas Francis	*Lawrence*
Gregory, Harold Lintner	*Pittsfield*
Harding, Harry Osborne	*Stoneham*
Harris, Frank Edward	*Stoneham*
Hayes, Frank Chandler	*Haverhill*
Heffern, William Joseph Jr.	*Worcester*
Hogan, Myles Thomas	*Cambridge*
Hughes, Frederick Gerald	*North Craftsbury, Vt.*
Jacobs, Leon Harry	*Rochester, N. H.*
Johnson, Edward Albert, Jr.	*Lawrence*
Langlois, Elie David	*Adams*
LeBœuf, Victor Anthony	*Worcester*
Lombard, John Blase	*Charlestown*
Lovejoy, Frederick Collins (A.B. Bates College)	*North Chesterville, Me.*
Lydakis, Luke Peter	*Crete, Greece*
Maher, William Henry	*Brockton*
Maloney, Charles Leo	*Newton*
Mannix, Robert Milan	*Worcester*
Mansfield, Frederick Allen	*Rockland*
Markarian, Asadoor	*Worcester*
Mauss, Charles Wendell	*Hingham*
Mayo, Newell Cephas	*Athol*
McDonnell, Thomas Charles	*Pittsfield*
McGrath, Martin Henry	*Natick*

Meagher, Matthew Aloysius	*Bennington, Vt.*
Meltzer, Philip Edward	*Roxbury*
Mercille, Joseph McKenzie	*Haverhill*
Miller, Ralph Henry	*Dorchester*
Miner, Arthur Westall	*Malden*
Morris, Isidore Philip	*Haverhill*
Neagle, Martin Walter	*West Newton*
O'Connor, Harry Newman	*Revere*
O'Day, Francis Daniel	*Hydeville, Vt.*
O'Donnell, Richard Joseph	*Lynn*
O'Donnell, William Thomas	*East Boston*
O'Neil, Gerald Bernard	*Chicopee Falls*
Paradis, Etienne	*Manchester, N. H.*
Payton, Charles Henry	*Brockton*
Pollina, Vincent Josephine	*Boston*
Porell, William Isaiah	*Haverhill*
Regnier, Joseph Augustine	*Pittsfield*
Riley, William Aloysius	*Lawrence*
Robertson, Walter Colburn	*Lakewood, R. I.*
Ronan, Catherine Frances	*Peabody*
Ryan, Frank Harold	*Oakdale*
Scott, Colburn Henry	*Cochituate*
Shohert, David Moses	*East Boston*
Souza de, Francisco Lopez	*Roxbury*
Staples, Edward John	*South Portland, Me.*
Stolovsky Samuel	*Lebanon, N. H.*
Strong, William Henry	*East Boston*
Sullivan, Jeremiah Joseph	*Milford*
Tobin, William James	*Bristol, R. I.*
Wall, William Tracy	*Weymouth*
Williams, Arthur Clyde	*North Anson, Me.*

First Year

Adelstein, Hyman Joseph	*Roxbury*
Aloojian, George	*Lynn*
Auger, Ernest William	*Manchester, N. H.*
Beerman, Sidney Hyman	*Chelsea*
Bowen, Fay Torence	*Dickinson Center, N.Y.*
Brown, William Foster	*Boston*
Bullard, Edward Mead	*Somerville*
Burrell, Harold Freeman	*South Weymouth*
Calabro, John	*Boston*
Caldwell, Warren Charles	*Dorchester*

Carignan, Arthur Martin	*Dover, N. H.*
Carrier, Josph Wilfred	*Salem*
Carroll Ralph Arthur	*Worcester*
Charren, Harry	*Providence, R. I.*
Coburn, Garnet	*St. Johns, N. B.*
Court, Samuel Jacob	*Haverhill*
Cousins, Lee Roy	*W. Somerville*
Covell, Percival Wentworth	*Duxbury*
Crockett, Earl Gustavus	*Milford*
Cronin, Harry James	*Portsmouth, N. H.*
Crowell, Harold William	*Lynn*
Cunningham, Ralph Edward	*Gloucester*
Davis, Hilma Adella	*Portland, Me.*
Dervin, Albert Henry	*Clinton*
Desautels, Edmond Leonide	*Dover, N. H.*
Desmond, Frederick James	*Beverly*
Dibblee, William Raymond	*Moore's Mills, N. B.*
Dimmick, Meriel Layham	*Newburypurt*
Donohue, Paul Alloysius	*Springfield*
Dorenbaum, Philip	*Springfield*
Doucet, Louis Philip	*Manchester, N. H.*
Eagan, John Patrick	*West Newton*
Farquhar, Andrew George	*Gilbertville*
Fialho, Joseph Augusto	*Gloucester*
Finkelstein, Nathan Harry	*East Boston*
Finkelstein, Paul Samuel	*Dorchester*
Finnegan, Walter John	*Worcester*
FitzGerald, Patrick Edward	*Newburyport*
Francis, Lewis Abbott	*Malden*
Gabeler, Charles Pierce	*Lawrence*
Gaudet, Yvon Joseph	*St. Joseph, N. B.*
Getchel, Robert Emmet	*Waltham*
Goldbarg, Alexander	*Boston*
Goodspeed, Frank Luther	*North Abington*
Greeley, Francis Joseph	*Newburyport*
Grignon, Joseph Ambrose	*Quincy*
Haskell, Harvey LeRoy	*Dexter, Me.*
Himmer, Richard Frank	*Lawrence*
Jaffee, Nathan Israel	*Brockton*
Johnson, Robert Kidder	*Lynn*
Johnstone, Alexander Patterson	*Waltham*
Keene, Stanley Clifford	*Roslindale*
Kells, Walter Donovan	*Greenfield*

Kelly, Clifford Earland	*Leominster*
Keltie, Alexander Leslie	*Jamaica Plain*
Kennedy, James Bede	*Springfield*
Kennedy, Walter Joseph	*Lawrence*
Kilbride, Patrick Lawrence	*Malden*
Killory, John Francis	*Brockton*
Krasnoo, Samuel	*Revere*
Lafayette, Theodore Edward, Jr.	*East Watertown*
Lanergan, Harry Clement	*Roxbury*
LeBlanc, Jules Arthur (B.A., St. Joseph's Univ.)	*Moncton, N. B.*
Levison, Abe	*Boston*
Levitt, Henry Salick	*Roxbury*
Litner, Maurice	*Chelsea*
Luciano, Angelo	*Somerville*
Lynch, Richard Alphonsus	*Dorchester*
Mackey, William John	*Lenox*
Mainini, Aniceto Giocondo	*Braggville*
Marjerison, Howard Mitchell	*Lawrence*
Martel, Chester Henry	*Lowell*
McCarthy, Timothy John	*South Boston*
McCue, William Henry	*Milford*
McGowan, Fred Dennis	*Dover, N. H.*
McKenna, John Henry	*Hyde Park*
Mullaney, James Joseph	*Lowell*
O'Gorman, Frederick Patrick	*So. Manchester, Conn.*
O'Leary, Thomas Bernard	*Dorchester*
Orr, Lauriston Ellis	*Dryden, Me.*
Ouimet, Arcade Joseph	*Leominster*
Parks, James William Marsden, Jr	*Somerville*
Parsons, Willis Burleigh	*Cliftondale*
Pennine, Saverio	*Providence, R. I.*
Pierce, Abijah Davenport	*Greenfield*
Pierce, Edmund Andrew	*New Bedford*
Reed, Mossman Gardner	*Houlton, Me.*
Reed, William Edward	*Somerville*
Roche, Edwin James	*Providence, R. I.*
Rommel, Benjamin	*Alma, N. B.*
Rubin Jacob	*Malden*
Rye, Edwin Leroy	*Norwood*
Saunders, Earl Augustus	*Deer Isle, Me.*
Sawyer, Bertram Hatch	*Salem*
Schofield, John Miller	*Whitinsville*
Smith, George Roy	*Hampton Station, N.B.*

Smith Patrick Henry	*South Boston*
Smith, Roy Weir	*Concord Junction*
Smith, Wilfred Benjamin	*Reading*
Spack, Maurice	*Chelsea*
Spears, Everett Eaton	*Roxbury*
Stankard, Walter Marten	*Waltham*
Stevens, Marion Cecelia	*Reading*
Strecker, Joseph Alfred	*Providence, R. I.*
Sullivan, Louis Edmund	*Maynard*
Sweeney, Edward John	*Fall River*
Tannebring, Chester Henry	*Three Rivers*
Thomas, John Donoclift	*Somerville*
Todd, Joseph Donald	*South Boston*
Volk Walter Jacob	*Cambridge*
Walker, William Dodge (A.B. Dartmouth Coll.)	*Manchester, N. H.*
Welch, William Francis	*Milford*
Wescott, Oliver Dunbar	*Malden*
Westphal, Edward Herman	*Webster*
Whalen, William Patrick	*Adams*
Whichelow, George William	*Boston*
Whittaker, Walter Elton	*Dorchester*
Widdowson, Frank Xavier	*Holyoke*
Wiles, Elmer Furbush	*Brooklyn, N. Y.*
Wilson, John Chester	*Beverly*
Wolff, Bruce McClellan	*Allston*
Wood, Paul Dennis	*Saco, Me.*

Special Students

Griffin, William Henry, Jr.	*South Boston*
Merrill, Ernest Samuel	*Lowell*

SUMMARY

Trustees		28

CORPS OF INSTRUCTION

Emeritus	8	
President and Professors	52	
Associate Professors	3	
Assistant Professors	29	
Lecturers	3	
Instructors	82	
Demonstrators	16	
Assistant Demonstrators	4	
Assistants	45	
Total engaged in work of instruction	—	242
Other Officers, not previously counted		42

STUDENTS

GRADUATE SCHOOL		9
SCHOOL OF LIBERAL ARTS:		
Senior	20	
Junior	26	
Sophomore	31	
Freshman	71	
Special	4	
Unclassified	9	
One-Year Pre-Medical	17	178
ENGINEERING SCHOOL:		
Senior	43	
Junior	46	
Sophomore	33	
Freshman	61	
Unclassified	4	187
CRANE THEOLOGICAL SCHOOL		10
JACKSON COLLEGE:		
Senior	15	
Junior	18	
Sophomore	20	
Freshmen	30	
Special	2	
Unclassified	3	
One-Year Pre-Medical	1	89
MEDICAL SCHOOL:		
Fourth Year	76	
Third Year	53	
Second Year	71	
First Year	112	312
DENTAL SCHOOL:		
Third Year	61	
Second Year	90	
First Year	122	
Special	2	275
BROMFIELD-PEARSON SCHOOL		10
Total registration of students		1070
Names appearing twice		6
Total number of students		1064

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Announcement of Jackson College
Register of Officers and Graduates

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